

April 1946

TECHNOLOGY REVIEW

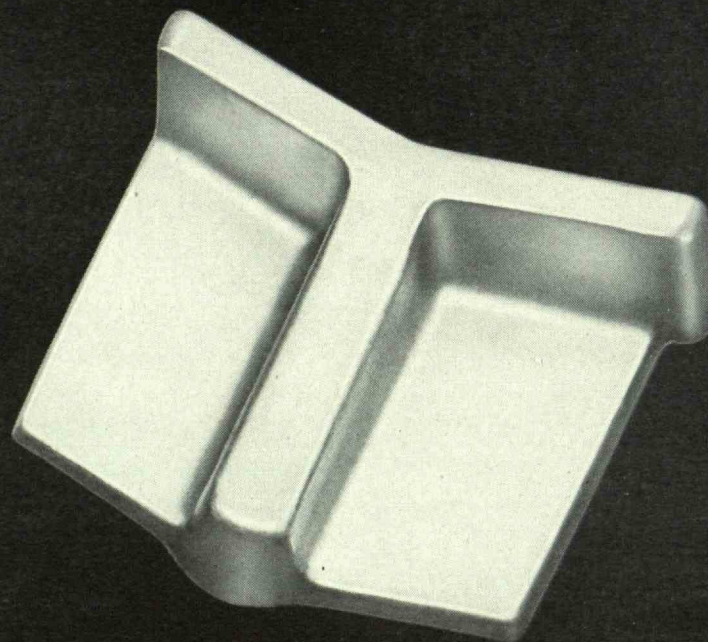
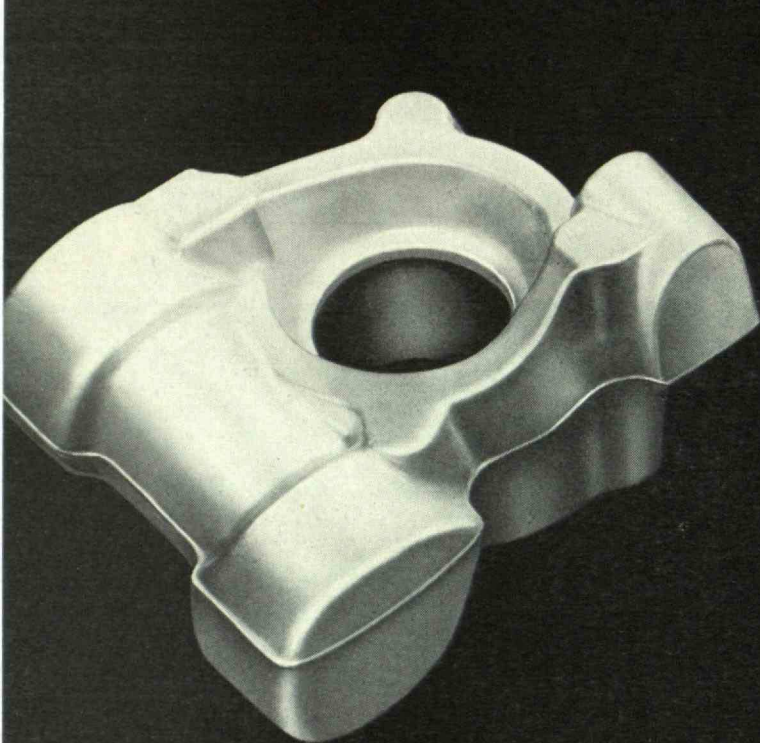
Title Reg. in U. S. Pat. Office



technology review

Published by MIT

This PDF is for your personal, non-commercial use only.
Distribution and use of this material are governed by copyright law.
For non-personal use, or to order multiple copies please email
permissions@technologyreview.com.



Precision
FORGING

HARVEY

METAL CORPORATION

HAROLD B. HARVEY '05 • *Engineers & Manufacturers* • SHERRY O'BRIEN '17

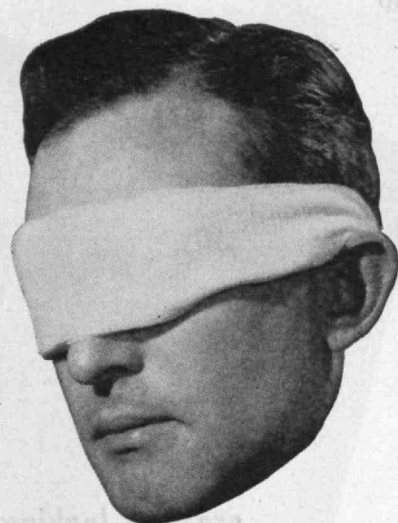
74th STREET and ASHLAND AVENUE • CHICAGO 36, ILLINOIS

FORGINGS IN ALUMINUM • BRASS • BRONZE • COPPER • MAGNESIUM • MONEL • ALLOYS

MACHINING FACILITIES

Major Eye Accidents Cost

according to estimates of the National Safety Council, an average of \$328.00 per injured man per year.



Minor Eye Injuries Cost

(estimated from typical records) an average of \$14.60—in first aid attention, idle machine charges and unproductive time—per injured man per year.



AO Safety Goggles Save

sums like these: a manufacturer of electrical equipment: \$14,000 in two years; a large machinery manufacturer: \$44,200 annually.

An adequate eye protection program will pay for itself—often in less than six months. Why not let your nearest AO Safety Representative give you complete details?



AO SAFETY GOGGLES SAFEGUARD THE EYES OF INDUSTRY

American  Optical

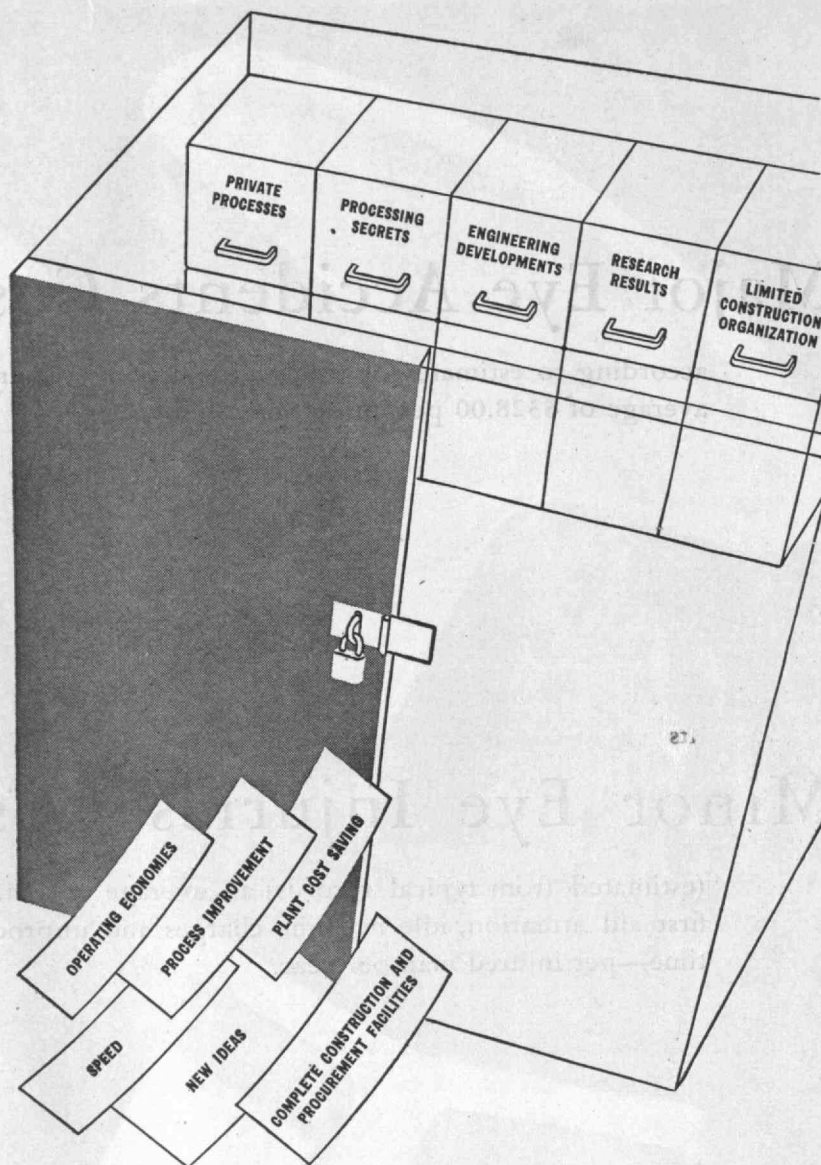
COMPANY

Safety Division

SOUTHBRIDGE, MASSACHUSETTS

BRANCHES IN PRINCIPAL CITIES

are you locking
OUT
more than you are locking
IN?



In a chemical world that is forever moving forward—and highly competitive!—it is natural that manufacturers should desire to keep control of the processes and plant designs their engineers have developed . . . often at great expense.

Badger offers chemical managements and their engineers the truly constructive outside viewpoint . . . with the assurance that confidence will not be violated—that private plans, processes or designs will not be disclosed or diverted into competitive reach.

Badger's broad cumulative experience and constantly developing engineering methods can provide

a fresh approach to old as well as to new problems . . . and the Badger design and construction organization is experienced in efficient co-ordination with its customers.

Making new processes work efficiently in large-scale production, improving designs and decreasing operating costs, saving time and initial plant costs . . . these are some of the pay-offs Badger has achieved for many a client.

More and more important concerns are finding out that they have often locked out more than they have locked in. Have you?

E. B. Badger & SONS CO., BOSTON 14 • Est. 1841
NEW YORK • SAN FRANCISCO • LONDON

PROCESS ENGINEERS AND CONSTRUCTORS FOR THE CHEMICAL, PETRO-CHEMICAL AND PETROLEUM INDUSTRIES

PENFLEXWELD

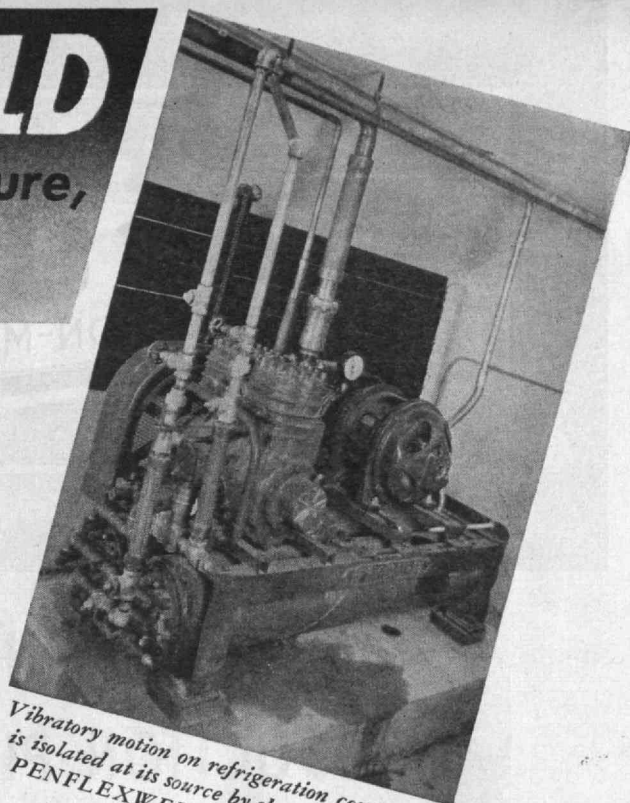
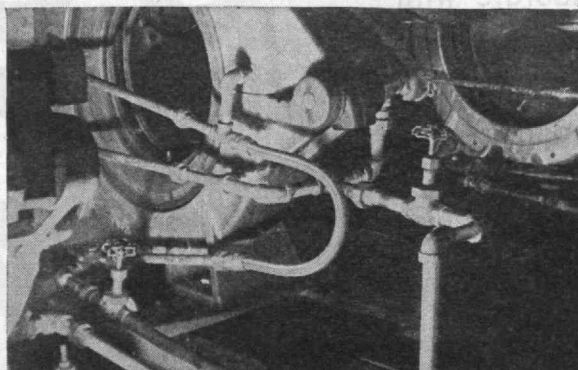
is a Versatile High-Pressure,
Corrugated Tubing

... designed for a wide variety
of applications in industrial plants

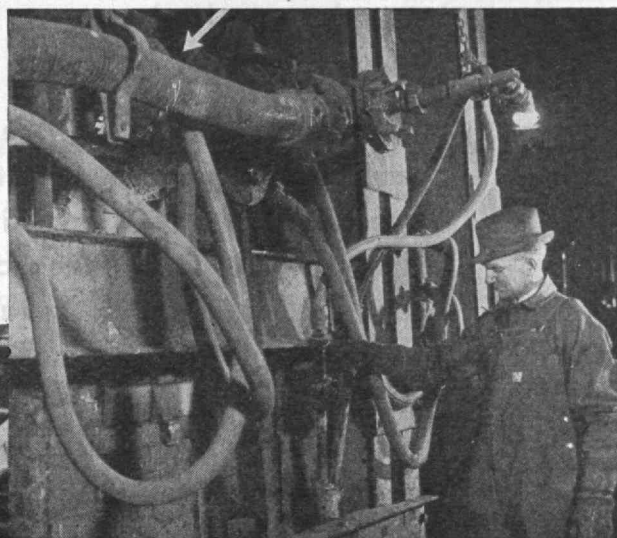
PENFLEXWELD Tubing is invaluable in handling volatiles, liquids and gases with penetrative or solvent characteristics. Its corrugated construction expands and contracts with temperature alternations, provides extreme flexibility and resists bursting, crushing, cracking and splitting. Its jointless length is seep-proof under practically all conditions of pressure and temperature.

PENFLEXWELD Tubing available with standard braiding and protective sleeve types. End fittings, Solseal for general use where temperatures do not exceed 250° F and Metseal for higher temperatures, provide a complete assembly of leak-proof, long-lasting service on split molds, platen presses, compressors, furnace doors, open hearth furnaces and many other installations. Write for Bulletin 90 C, describing sizes $\frac{5}{32}$ " to 2" I.D. and special literature on larger sizes.

Below—Split molds of the tire vulcanizing type are often equipped with PENFLEXWELD to enable them to give longer, trouble-free service.



Vibratory motion on refrigeration compressors is isolated at its source by short lengths of PENFLEXWELD.



Open hearth operation requires tubing that resists extremes of temperature. PENFLEXWELD is designed to do that kind of job. Arrow points to 4" PENFLEX Interlocked Hose on high-pressure steam line.

PENFLEX

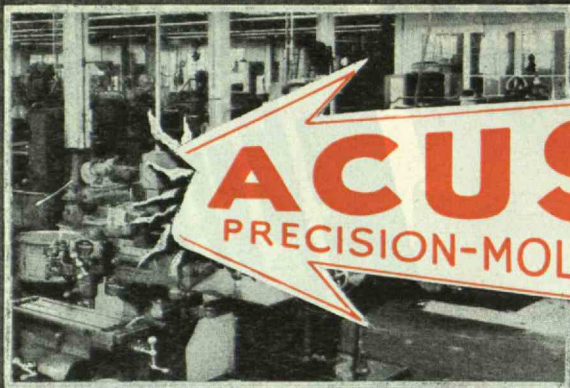
PENNSYLVANIA FLEXIBLE METALLIC TUBING CO.

Established 1902

7211 POWERS LANE

PHILADELPHIA 42, PA.





YOUR
PRODUCTION PICTURE

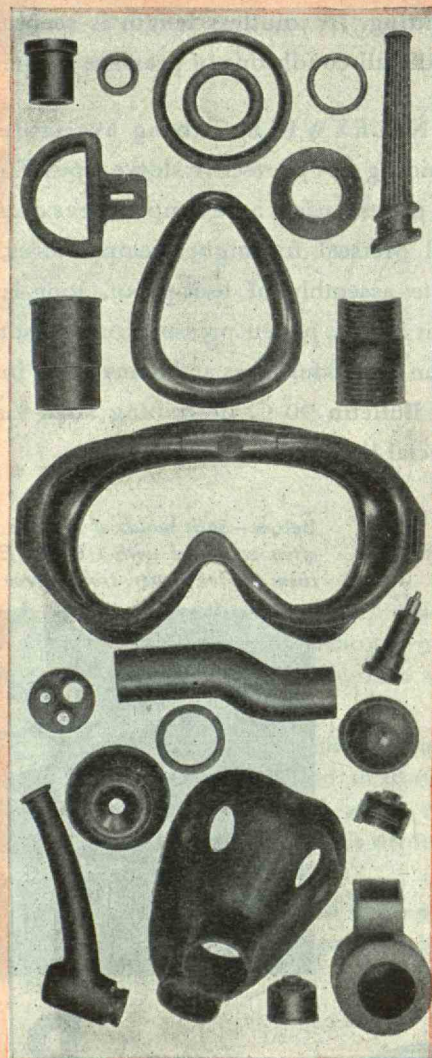
ACUSHNET

PRECISION-MOLDED RUBBER PARTS and PRODUCTS

YOU CAN PUT OUR SKILL, EXPERIENCE, FACILITIES INTO YOUR PRODUCTION PICTURE

Yes, our specialized skill, long experience and complete modern facilities for designing and precision-molding natural and synthetic rubber parts and products can be applied to your particular requirements.

Send us the details of the parts problems or conditions you wish to control or overcome in the assembling of your products. Our Engineering and Laboratory Staffs will gladly collaborate with your designers or engineers, or submit designs of the part recommended for maximum efficiency and economy. When design is accepted we devise the techniques and build the tools to produce the required parts in any quantity.



Though representative of our versatility, the above illustration shows only a few of the parts in constant production.

Acushnet
New Bedford, Mass., U.S.A.
Precision-Molded RUBBER Parts & Products

PROCESS CO.

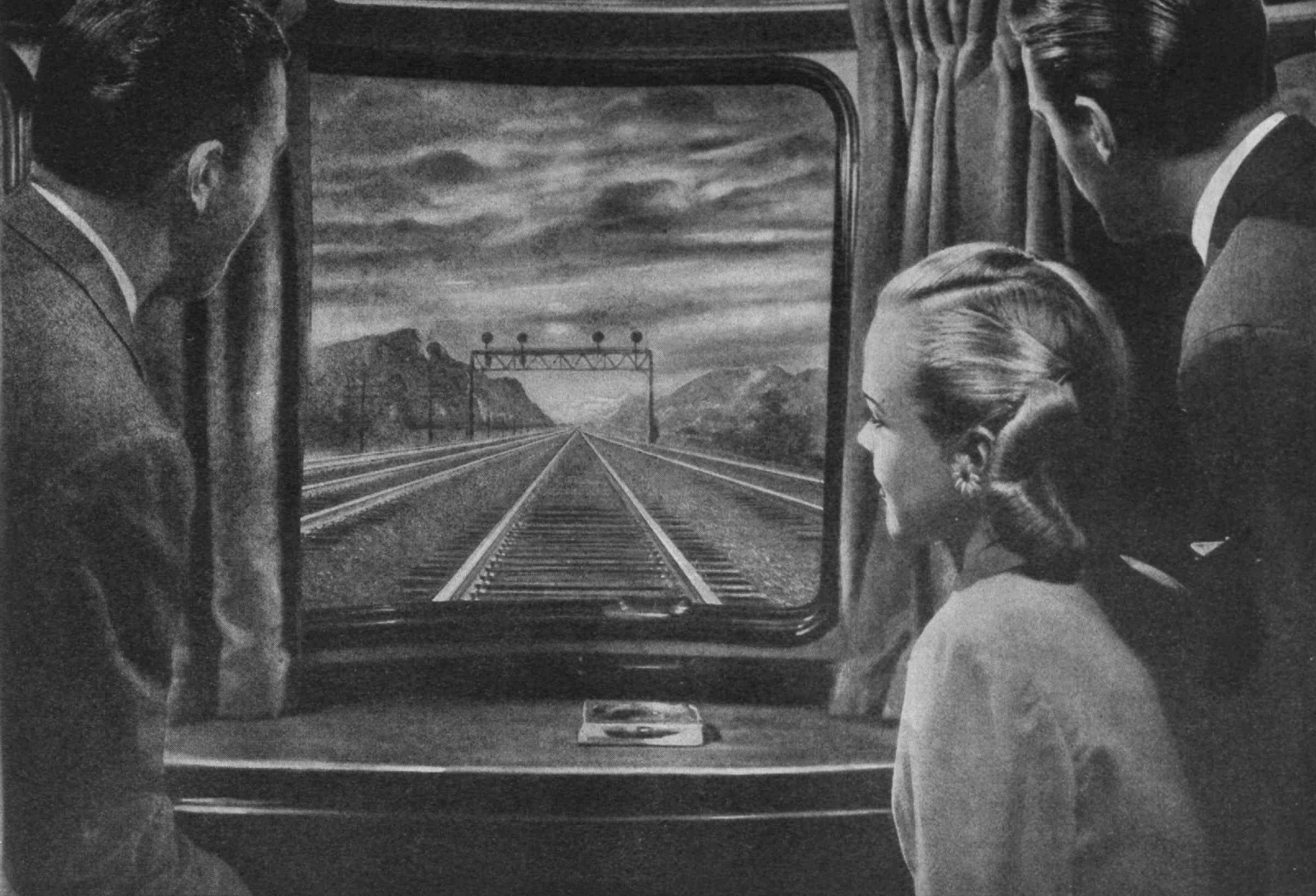
Write to Acushnet Process Company, New Bedford, Massachusetts giving complete information, specifications or samples. No doubt our Research Records will reveal short cuts in the development of your part or product.

P. E. Young '09, President
K. P. Goodwin '37, Sales Manager

F. W. Bommer '14, Vice-President
R. B. Young '38, Production Superintendent

E. A. Norris '27, Factory Manager
L. A. Keches '40, Chemist

Address all correspondence to 774 Belleville Ave., New Bedford, Mass.



There's plenty here you can't see

YOUR TRAIN RIDE of the future may be a more delightful experience because of something you can't see in this picture.

The thing you can't see is the customary gap between the ends of the rails. You can't see it because it isn't there. For the rails, instead of being bolted together, are welded together into lengths of solid metal sometimes a mile long.

This is done by pressure-welding . . . by forcing the rails together at their ends in the heat of oxy-acetylene flames until they become a single, continuous piece, uniform in appearance, structure, and strength.

Pressure-welded track is being used increasingly by railroads because it cuts maintenance costs and provides a smoother, quieter ride for passengers.

Pressure-welding also is used by many other industries. Some use pressure-welding for the construction

of overland pipe lines . . . some for the fabrication of machinery parts . . . some for making oil-well tools . . . and some are using pressure-welding to make airplane and automobile parts.

Pressure-welding is a research development of The Linde Air Products Company and The Oxyweld Railroad Service Company, Units of UCC.

If you are a bit technically minded or just want to know more about this subject, write for booklet P-4 on Oxy-Acetylene Pressure-Welding.

UNION CARBIDE AND CARBON CORPORATION
30 East 42nd Street, New York 17, N. Y.



Products of Divisions and Units include—

ALLOYS AND METALS • CHEMICALS • PLASTICS

ELECTRODES, CARBONS, AND BATTERIES

INDUSTRIAL GASES AND CARBIDE

Now...



Portable Bryant Thread Gages

Bryant Thread Gages have proved their superiority for bench work . . . now, the new *Portable* gage offers fast, accurate inspection of internal threads in large castings, work in the machine, etc., or in any parts where bench inspection may be inconvenient.

The Bryant Portable Thread Gage is so accurate that it can be used to check master gages, and on production work it will check threads *all over* in a few seconds. It is 4 to 5 times faster than plug gaging. Retracting gage segments eliminate threading the gage into and out of threaded holes — they prevent wear — on Class 4 and 5 fits, selective assembly is possible by classing threads according to indicator readings — pilots on back of thread segments mean rapid, catchless insertion and removal of the gage — there is no chance of cross threading.

The fastest, cheapest, most accurate method of inspecting threads is the Bryant method — it is the only method for *visually* indicating the size of internal threads. Write for complete details.



Perfect for inspecting threads on large pieces that cannot be moved conveniently to the inspection department.



Allows checking of threads in the work in the machine.



Eliminates threading of gage into and out of threaded holes.



Four or five times faster than plug gaging.



Gives overall inspection in a few seconds—at a glance.



Master gage accuracy transferred quickly to production parts.

BRYANT



BRYANT CHUCKING GRINDER CO.

SPRINGFIELD, VERMONT, U. S. A.

CARBON BLACKS

Channel and Furnace Types

Forty-one distinct grades covering the complete range of industrial requirements.

RUBBER

LACQUER

PAINT

VARNISH

INK

PAPER

DRY CELLS

PLASTICS

FERTILIZER

ORE REDUCTION



DISTILLED PINE PRODUCTS

Pine products for industry, destructively distilled—Pine Tar, Pine Tar Oil, Pine Oil, Solventene, Turpentine, and Charcoal.



GODFREY L. CABOT, INC.

77 FRANKLIN STREET
BOSTON 10, MASS.

CABOT

POSITIVE CONTROL

of Varying Power Supply

Raytheon Voltage Stabilizers

DELIVER OUTPUT VOLTAGE CONSTANT TO $\pm \frac{1}{2}\%$

FLUCTUATION of line voltage need not impair the performance of your electrical equipment. Such variations are easily corrected with magnetic-type, entirely automatic Raytheon Voltage Stabilizers.

Positive control is gained. Power supply is stabilized to $\pm \frac{1}{2}\%$. Reliability and accuracy of performance are effectively improved, *and at low cost.*

Investigate. Determine how positive control of line voltage can benefit your equipment. Our Bulletin DL-48-537 gives the detailed story. Write for it today.



Get These Principal Operating Advantages:

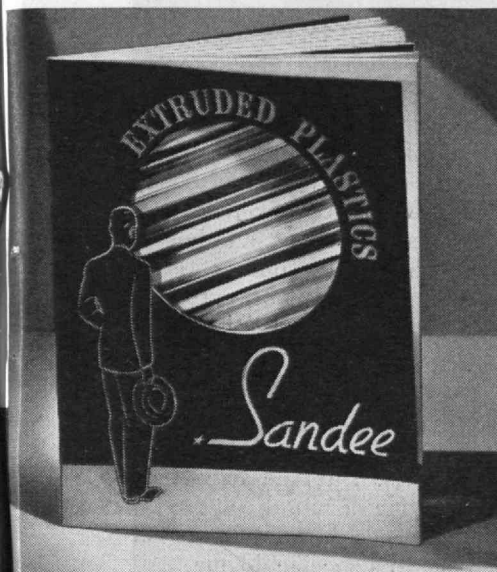
- Control of output voltage to within $\pm \frac{1}{2}\%$ of 115 or 230 V.
- Stabilization at any load within rated capacities.
- Quick response. Stabilizes varying input voltage within 1/20 second.
- Entirely automatic. No adjustments. No moving parts. No maintenance.

RAYTHEON

RAYTHEON MANUFACTURING COMPANY
Industrial Electronics Division, Waltham 54, Mass.

Excellence in Electronics

EXTRUDED PLASTICS *Exclusively*



THIS is indeed an era of specialization! We are Extrusion Specialists! Modern high-speed mass production demands the extreme precision and the uniform finer quality that the long experienced specialist gives. Here at SANDEE we've concentrated upon doing ONE THING . . . Extruding Rigid and Flexible Thermoplastics. We do no injection molding, no compression molding, no fabricating . . . just EXTRUDING! Our customers say we do a superlative job . . . the kind of pre-

cision workmanship you'd expect only from an organization of specialists. Here you'll find all the intricate know-how, all the modern methods and machinery and materials required in serving many of America's largest users of Rigid and Flexible Extruded Plastic Sections. If it's an extruded plastic problem, by all means "put it up to SANDEE!" Consult our plastic engineers now, or send for the Sandee Reference book pictured here.

Sandee



SALES REPRESENTATIVES IN 19 PRINCIPAL CITIES

Sandee Manufacturing Company

3945 NORTH WESTERN AVENUE • CHICAGO 18, ILLINOIS

EXTRUDED PLASTICS AND SPECIAL TOOLS

FAST AND PROFITABLE

FOR SECOND
OPERATIONS

-together with
full facilities
for completing
pieces from
bar stock



Rapid Operation with Minimum Effort

Ask for booklet showing why
these versatile machines are
Accurate, Efficient and Fast



Brown & Sharpe Mfg. Co.
Providence 1, R. I., U.S.A.

ON NOS. 1 and 2
WIRE FEED
SCREW MACHINES

BROWN & SHARPE

Yours... for the asking!

a chart of
INDUSTRIAL USES
for

Liquid
RED DIAMOND
Dry Ice

and CO₂



Here are valuable facts on actual applications of DRY ICE and CO₂ for every potential user of these vital materials—summarized from a recent Liquid survey. All applications listed are in practical use... Many of the wartime functions of DRY ICE and CO₂ have peacetime counterparts—perhaps in your industry.

Use this chart as a check-list for possible applications to your processes or problems... DRY ICE and CO₂ serve industry in many important ways including chilling lubricants, shrinking metals, packaging foods, processing oil, controlling paint quality, etc.

Ask for your copy of this free chart today... You'll find it helpful in many ways.

The Liquid Carbonic Corporation

3110 South Kedzie Avenue, Chicago 23, Illinois
Branches in Principal Cities of the United States and Canada

THE TABULAR VIEW

Personal Responsibility, assuming increasing importance as our social organizations become more complex, is the theme of the baccalaureate address (page 347) delivered to recent graduates by HAROLD W. STOKES, President of the University of New Hampshire. With degrees from Marion College, the University of Southern California, and Johns Hopkins University, Dr. Stokes calls upon his experience as teacher, administrator, and dean of graduate schools at the universities of Nebraska and Wisconsin to remind us that no group or nation rises above the level of its individual members.

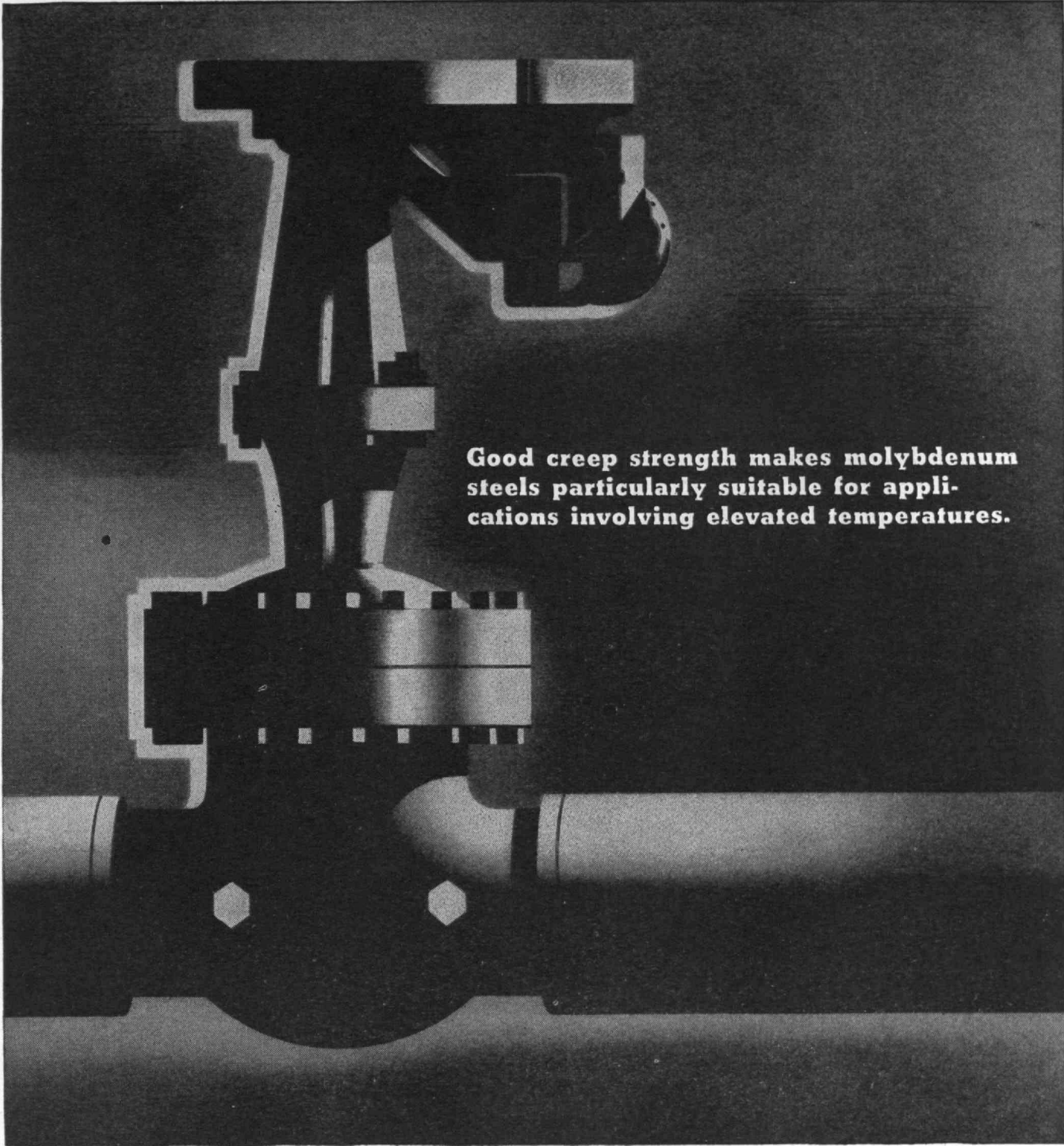
Return to Religion, stated PRESIDENT KARL T. COMPTON in his valedictory address to the graduating class (page 349), is the primary requirement in dealing with society's present-day difficulties. But the religion to which Dr. Compton refers is one of moral conduct, of application of the golden rule, and of expression of culture rather than of adherence to a specific dogma.

Today's Problem imposes the need for constant study of human relationships. Reminding us that no professional man ever completes his study, LIEUTENANT GENERAL JAMES H. DOOLITTLE, '24, goes on to point out in his commencement address (page 353) some of the needs of the aviation industry. Except for the period of study after which he received his master's and doctor's degrees from the Institute in 1924 and 1925, respectively, for research in aeronautics, General Doolittle was closely associated with Army aviation from 1917 to 1930. In 1930 he became manager of the aviation department of the Shell Petroleum Corporation, and in 1940 he was commissioned in the Army Air Corps. General Doolittle has recently returned to the Shell Petroleum Corporation as vice-president.

The Story of Radar, intimately tied up with the Institute's war activities, is related (page 355) by the director of the Radiation Laboratory, L. A. DU BRIDGE, who has recently returned to the University of Rochester to resume duties as dean of the faculty of arts and sciences. He is co-author of the book, *Photoelectric Phenomena*, author of *New Theories of the Photoelectric Effect*, and editor of the "International Series in Physics." In the fall of 1940 he was called from Rochester to direct the newly formed Radiation Laboratory. The technical achievements of the Radiation Laboratory were evaluated in "Expanded Horizons" in the November, 1945, issue of *The Review*. Dr. du Bridge now tells the story of the organization and operation of the Radiation Laboratory.

Ensigns in the Making were the students in the Navy's V-12 program, which is regarded (page 359) by CAPTAIN WILLIAM H. BURACKER, U.S.N., as the most interesting experiment ever to be tried in democratic education. After long and brilliant service in the Navy, Captain Buracker returned to the Institute (from which he received his master's degree in 1930) as professor of naval science and commanding officer of the Navy training

(Concluded on page 338)



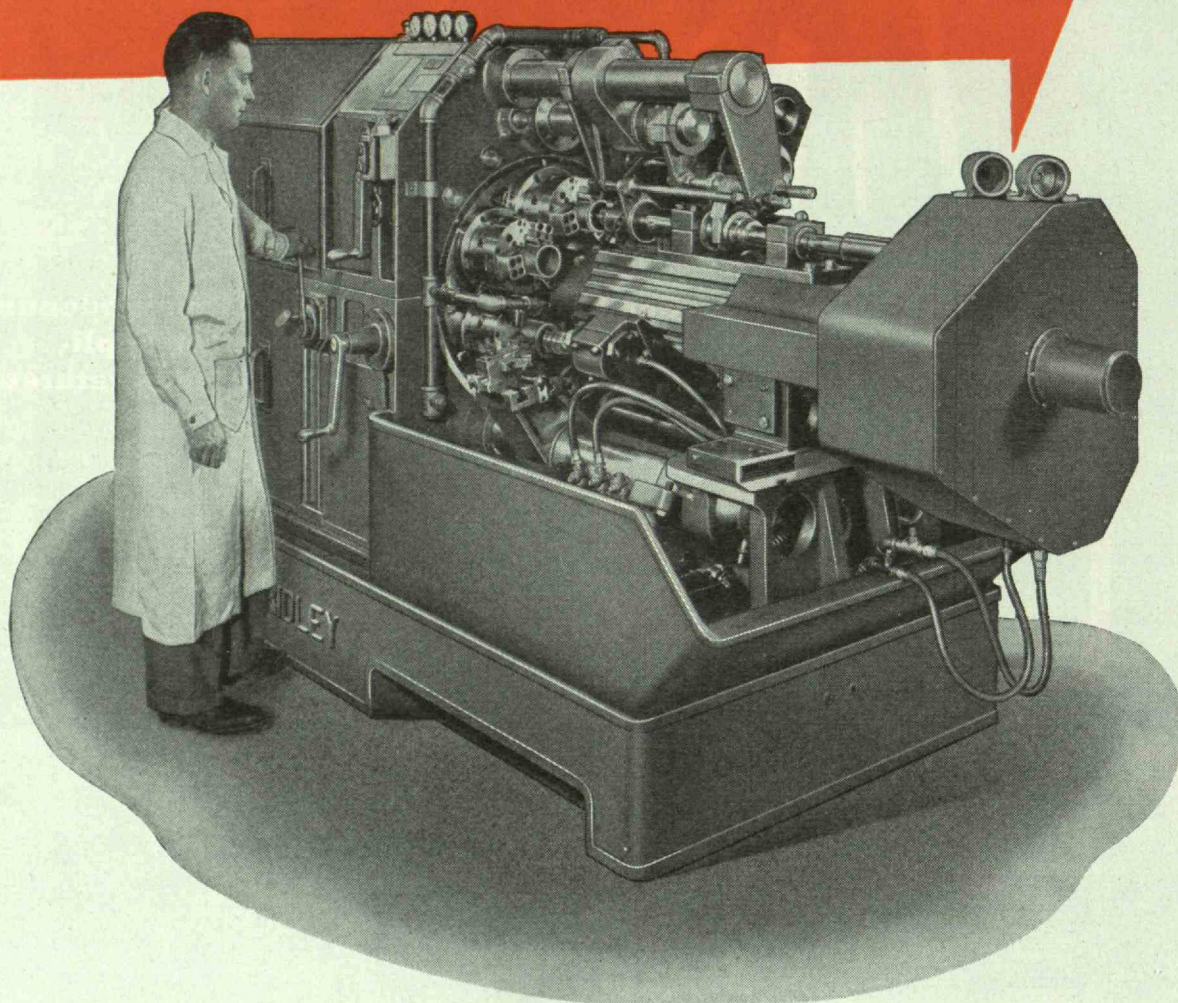
Good creep strength makes molybdenum steels particularly suitable for applications involving elevated temperatures.

MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"
CLIMAX FURNISHES AUTHORITATIVE ENGINEERING DATA ON MOLYBDENUM APPLICATIONS.

Climax Molybdenum Company
500 Fifth Avenue • New York City

LEADERSHIP

PROVED BY HUNDREDS OF CASE HISTORIES.....



Our "case history" files illustrate the fact that the speed . . . accuracy and versatility of New Britain Multiple Spindle Automatics provide the right combination for countless machining operations. Some are jobs which could not be performed in one operation on any machines except New Britains. Others illustrate high-speed, accurate machining of extremely hard metals requiring deep cuts.

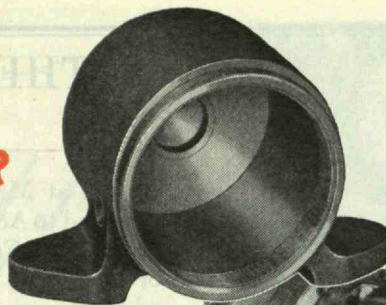
Others are perfectly simple pieces . . . remarkable because of the economies made possible by switching from single spindle machines to New Britains.

New Britain engineers stand ready to show you how the profit possibilities of New Britain Automatic Screw and Chucking Machines can be applied to your product . . . Write us about your machining problems.

NEW BRITAIN AUTOMATICS

THE NEW BRITAIN MACHINE COMPANY
NEW BRITAIN, CONNECTICUT
NEW BRITAIN-GRIDLEY MACHINE DIVISION

...HERE'S ANOTHER

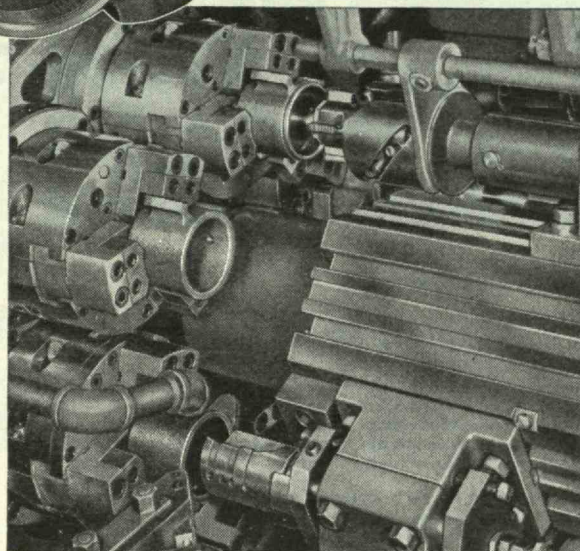


Houdaille Malleable Iron
Shock Absorber Housing

The inside surface of this shock absorber housing must be within a specified tolerance of .002" at all points. This requires not only preservation of accurate diameter, but absolute squareness of the end surface with the cylinder.

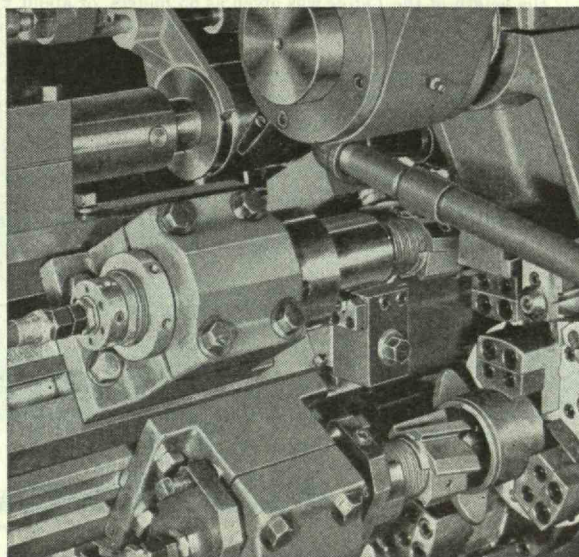
The remarkable feature of the operation is that Houdaille* turns this part out in 29 seconds, from rough casting to finished piece on a battery of New Britain Model 675 Multiple Spindle Automatic Chucking Machines...with no finish grinding required. The production of 122 pieces per machine per hour, day-in day-out is an ideal instance of how the speed and accuracy of New Britains combine to give you the utmost in production and low cost per piece.

*Pronounced—Hoo-dye



FRONT VIEW

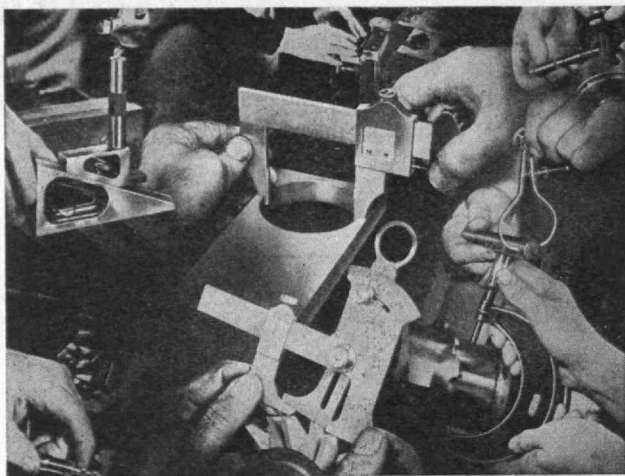
Entirely open end construction provides accessibility for simplified chucking, cutting tool and attachment setup.



REAR VIEW

Wide open end construction provides extra large chip space...accessibility from three sides and from above that permits excellent visibility and easy tool adjustment.

New Britain builds a complete line of Multiple Spindle Automatic Chucking Machines...four, six and eight spindles up to 12" capacity...Also a complete line of Multiple Spindle Automatic Screw Machines to 2¼" capacity.



STARRETT TOOLS

Set the Standard for Quality Control

Let safe, dependable Starrett Precision Tools handle those extra production inspection operations that make the difference between a final OK and a reject. Made by master

toolmakers — by men who know how to make good tools — they combine unflinching accuracy with convenient design to produce precision work with ease and efficiency.

THE L. S. STARRETT CO., ATHOL, MASSACHUSETTS, U.S.A.

World's Greatest Toolmakers

STARRETT

PRECISION TOOLS • DIAL INDICATORS • GROUND FLAT STOCK
HACKSAWS • METAL CUTTING BANDSAWS • STEEL TAPES

BATH IRON WORKS CORPORATION

*Shipbuilders and
Engineers*

BATH, MAINE

THE TABULAR VIEW

(Concluded from page 334)

schools at M.I.T. At the beginning of the war he was attached to Admiral Halsey's staff in the Pacific. In January, 1945, Captain Buracker was assigned to the staff of the Army and Navy Staff College in Washington, where he remained until his return to the Institute last fall.

Third Horseman — pestilence — faces many of the peoples of Europe and Asia. How the war affected the spread of disease is described (page 345) by **FREDERIC W. NORDSIEK**, '31, Editorial Associate of *The Review* and skilled writer and authority on food technology.

MAIL RETURNS

Ghost Ship

FROM ROBERT LACY, '98:

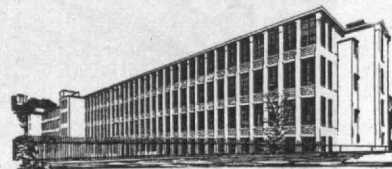
The article in the January issue of *The Review* about sunken ships is very interesting to me, particularly since in the past I have worked on the idea of recovering sunken treasure. I should like to have Mr. Ley tell me the depth of the water over the *Lutine*, the range of the tide there, and approximate depth, length, and breadth of the vessel.
Baltimore, Md.

FROM WILLY LEY:

Two long-distance moves within one year did not improve the orderliness of my library very much, and for this reason I have to quote more or less from memory, but I am fairly sure of my figures. As I recall it, the length of the *Lutine* was given as 65 meters, or about 210 feet, the beam as 12 meters, and the normal crew as 220. The *Lutine* is buried about two kilometers from the northeast corner of the Dutch island of Terschelling, with a mean depth of water of some 12 meters. This depth refers only to the water; in 1914 it was estimated that the *Lutine* was covered by some six meters of sand.

These figures are from memory, and even if they were precise in 1914, they certainly do not apply now. The resting place of the *Lutine* is in the path of a strong current, so that there are steadily shifting sandbanks and varying depths. It is quite likely that the wreck has broken up in the meantime, but it was still in one piece in 1913.
Washington, D. C.

**Speed with
Economy**



Alex. Smith & Sons Carpet Co.

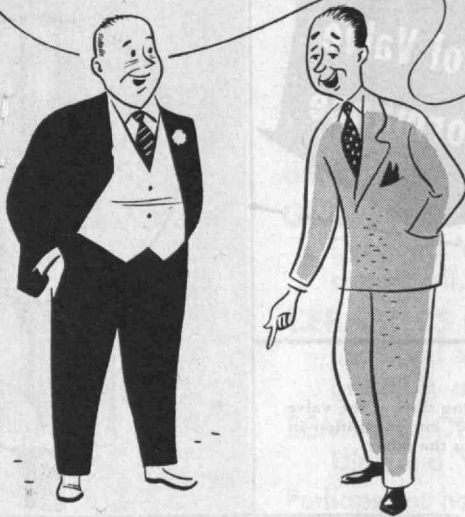
When you select a reliable builder, you can keep your mind on *your business* instead of on the building project . . . Important these days.

W. J. BARNEY CORPORATION

101 PARK AVENUE, NEW YORK
INDUSTRIAL CONSTRUCTION

Alfred T. Glassett, '20, Vice President

—*and just what
portion of this plant
does **TAFT-PEIRCE**
occupy?*—



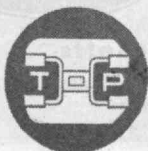
This question was asked in all seriousness by a dyspeptic skeptic who—looking at this same picture—evidently suspected that he might be looking at a picture of the entire city of Woonsocket.

The answer is this: Taft-Peirce occupies *all of it*—500,000 square feet of what is truly a closely knit industrial city composed of several precincts. The main plant houses the world's most famous tool-room, the Contract Manufacturing Division, the Engineering Department, and the Main Offices.

Other buildings house Machine Tool production, the Thread Gage Department, the Small Tool and Gage Division, and one of the country's most complete heat-treating departments.

Any manufacturer, with engineering, tooling, special machine, production or gaging problems, can engage *any part* of these facilities as an adjunct to his own.

For further details, write to: THE TAFT-PEIRCE MFG. COMPANY, Woonsocket, Rhode Island.

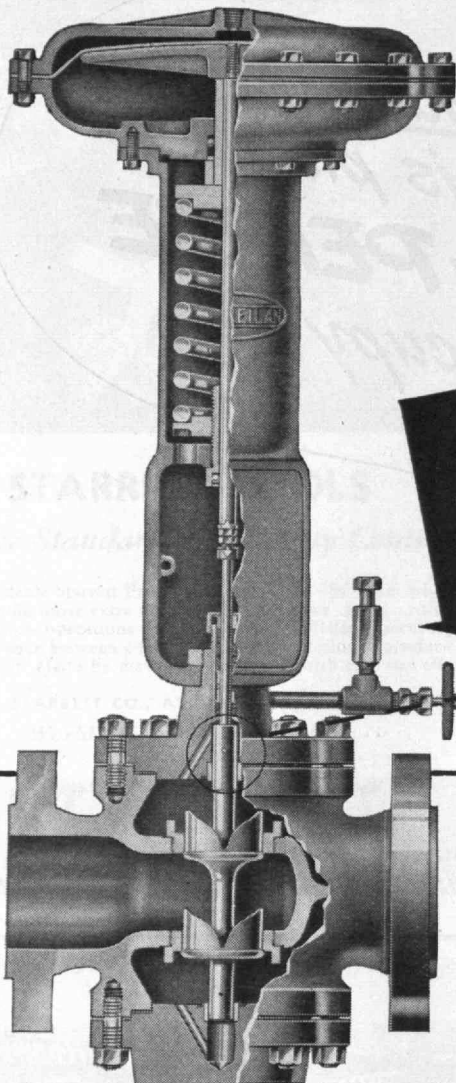


...for engineering, tooling, contract manufacturing:

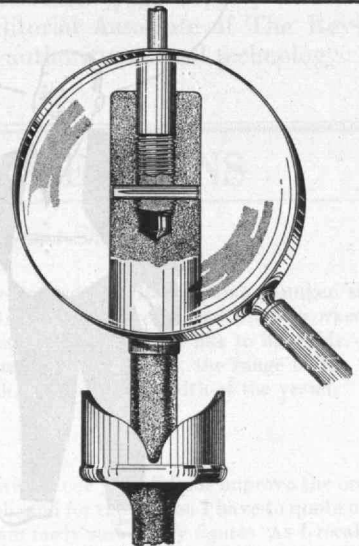
TAKE IT TO TAFT-PEIRCE

ATTENTION TO DETAIL

Pays Off in
Control Valve
Performance



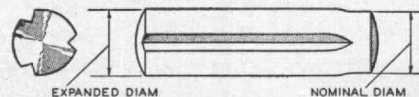
Note: One skirt of the valve plug is 90° out of position in relation to the other.



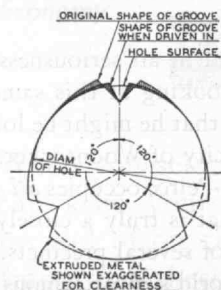
Mason-Neilan method of pinning plug & plug stem assures strongest possible assembly

The tee head construction used on some earlier control valves required clearance between the stem and plug to allow for bonnet and seat misalignment, permitting lost motion (vertical and rotary) which cannot be tolerated since the plug must respond to the slightest pressure change on the diaphragm.

The present Mason-Neilan threaded and pinned stem and plug construction does away with all toggles and free alignment joints, yet any tendency towards binding has been eliminated by pilot machining on the bonnet and blindhead and by holding all machine operations to close tolerances. The plug guide is drilled and tapped with a pilot section above the threads for accurate centering of the stem. The threaded joint provides the mechanical strength for holding the two parts together. The stem is locked into the plug by a special grooved pin which fits tightly at both ends in the guide as well as in the center through the stem.



* Pins have three grooves extending from end to end, except for a short distance on one end which is the nominal diameter of the pin and serves as a pilot for driving.



In forming the grooves, a portion of the metal is displaced locally at the sides leaving a bulge of extruded metal along the edges of grooves and resulting in an expanded diameter. The action consists of forcing the elastic bulges partly back into the grooves when the pin is hammered or pressed into the drilled hole, thus forming an extremely tight fit against the hole wall.

MASON-NEILAN REGULATOR COMPANY

1190 Adams Street, Boston 24, Massachusetts

New York Philadelphia Pittsburgh Cleveland Chicago Tulsa
Atlanta St. Louis Houston Los Angeles San Francisco

Mason Regulator Co. of Canada, Ltd., Montreal, Canada

MASONEILAN

Are You Taking Full Advantage
of these *newest*

NORTON DIAMOND WHEELS?

YOU can get Norton Diamond Wheels not only in all the popular sizes and types for grinding carbide tools but also in a wide range of sizes and shapes for use on materials that are unworkable with ordinary grinding wheels. The three Norton bonds — Metal, Resinoid and Vitrified—make it possible for Norton Diamond Wheels to meet many different conditions.

GLASS (Optical, Container, Plate, Industrial, Watch Crystal)
Diamond Wheels for cylindrical and surface grinding, cutting-off, edging, lens generating.

CERAMICS (Porcelain Insulators, Tile, Brick, Refractories)
Diamond Wheels for centerless, cylindrical and surface grinding and for cutting-off.

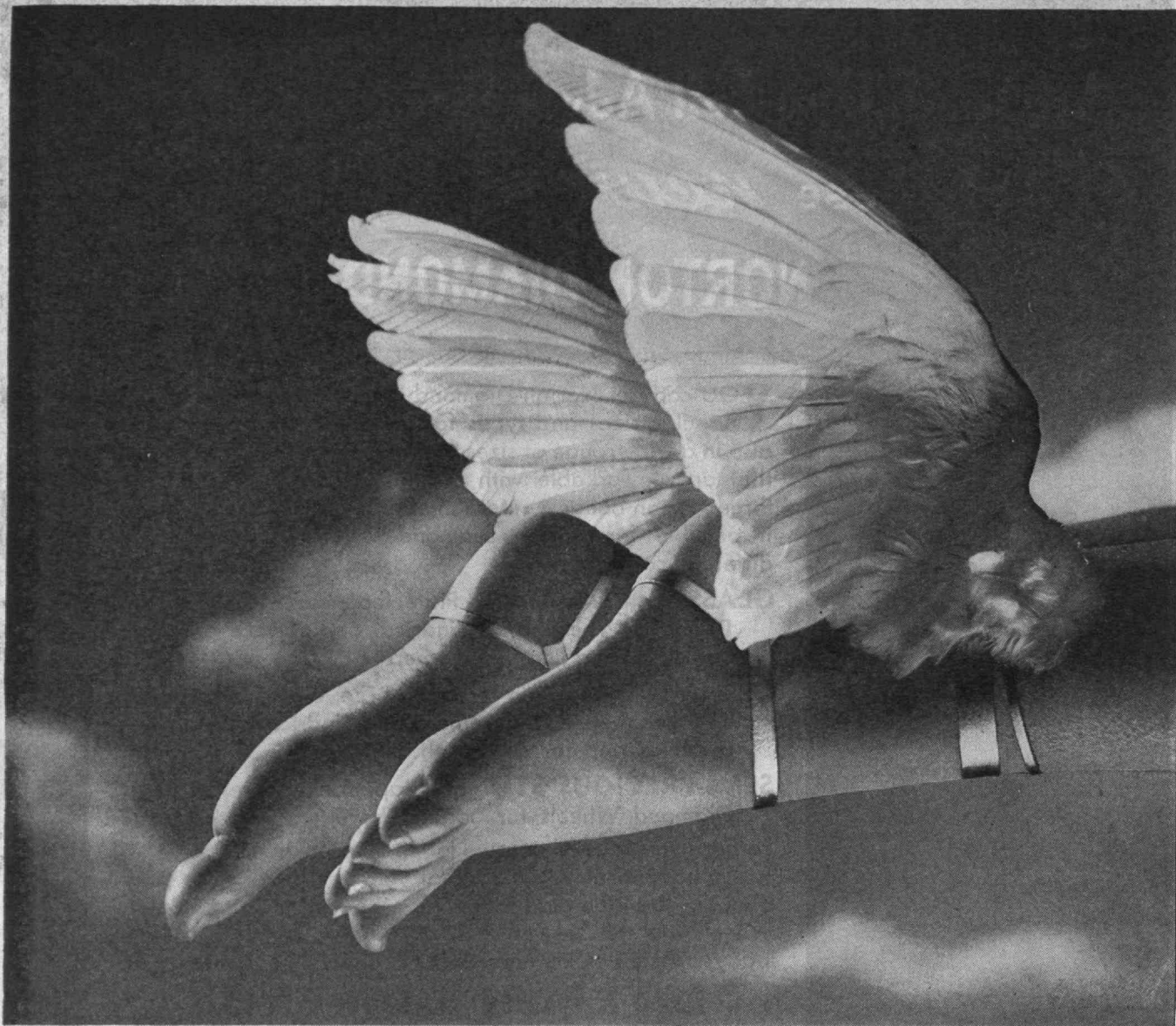
SEMI-PRECIOUS STONES (Sapphires, Rubies, Agates)
Diamond Wheels for edging, beveling and surfacing.

Perhaps you have an unusual job that needs diamond wheels. If you have, or if you think that you may have, write to us about it. We'll be glad to tell you whether Norton Diamond Wheels are the answer — no obligation, of course. Write today to the Sales Engineering Department, Abrasive Division.

NORTON COMPANY
31 New Bond Street, Worcester 6, Mass.

NORTON ABRASIVES





Let's go—faster, safer, smoother!

ANOTHER REASON FOR GOODYEAR LEADERSHIP

RESTLESS man always wants to go . . . to discover new horizons, new opportunities. That's why human progress is so closely related to improvements in transportation.

Nothing has had more influence on modern transportation than the pneumatic tire. It gives greater speed, safety, comfort for automobiles, airplanes, trucks. While Goodyear has been the leading tire builder for 31 years, it contributes to better transportation in many other ways.

Goodyear is a pioneer in aviation. Soles and heels for your shoes;

Airfoam for increased comfort in plane, train or car; conveyor belts that move mountains—are but a few of the many Goodyear products that help give better transportation.

Back in 1901, Goodyear turned to a symbol of transportation—the winged foot—as the inspiration for a trade-mark. Today, the famous Goodyear *Wingfoot* travels with the Goodyear name all over the world . . . because, after nearly half a century, Goodyear still works to help move men and materials—faster, safer, smoother.

A pioneer in rubber and the world's leading tire builder, Goodyear is also an experienced worker in many other fields — metals, fabrics, chemicals, plastics . . . constantly developing new products that will serve you better.



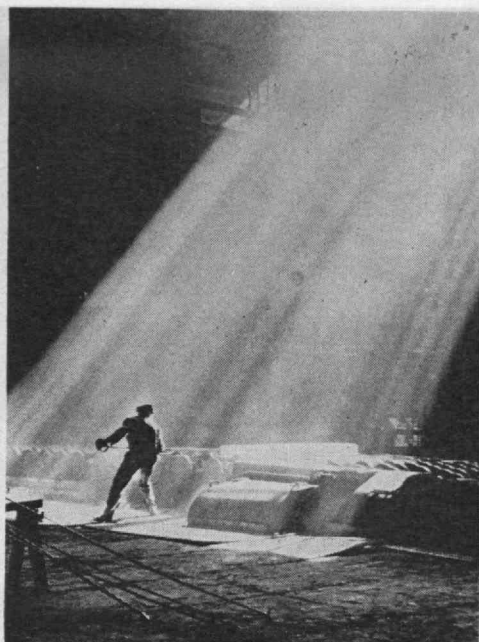
THE GREATEST NAME IN RUBBER

THE TECHNOLOGY REVIEW

TITLE REGISTERED U. S. PATENT OFFICE

EDITED

AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY



United States Steel Corporation

Work produces wealth.

CONTENTS for APRIL, 1946

THE COVER — A DAISY STUDY

*From a photograph, recently exhibited at the Massachusetts
Institute of Technology gallery, by J. O. Fitzgerald, Jr., M. D.*

DAWN SAIL	FRONTISPIECE	344
THIRD HORSEMAN	BY FREDERIC W. NORDSIEK	345
PERSONAL RESPONSIBILITY	BY HAROLD W. STOKES	347
<i>Must Increase as Social Organization Becomes More Complex</i>		
RETURN TO RELIGION	BY KARL T. COMPTON	349
<i>Urged as the Way to Achieve World-wide Unity</i>		
TODAY'S PROBLEM	BY JAMES H. DOOLITTLE	353
<i>Imposes Need for Constant Study of Human Relations</i>		
THE STORY OF RADAR	BY L. A. DU BRIDGE	355
<i>Has Its Roots Firmly Entrenched at Technology</i>		
ENSIGNS IN THE MAKING	BY W. H. BURACKER	359
<i>Represent New Experiment in Democratic Education</i>		

☆ ☆ ☆

THE TABULAR VIEW	334
<i>Contributors and Contributions</i>	
MAIL RETURNS	338
<i>Letters from Review Readers</i>	
THE TREND OF AFFAIRS	345
<i>News of Science and Engineering</i>	
THE INSTITUTE GAZETTE	360
<i>Relating to the Massachusetts Institute of Technology</i>	

Published monthly from November to July inclusive on the twenty-seventh of the month preceding the date of issue, at 50 cents a copy. Annual subscription, \$3.50; Canadian and foreign subscription, \$4.00. Published for the Alumni Association of the M.I.T.: A. Warren Norton, President; Alfred T. Glassett, Alf K. Berle, Vice-presidents; Charles E. Locke, Secretary; Ralph T. Jope, Treasurer. Published at the Rumford Press, 10 Ferry Street, Concord, N. H. Editorial Office, Room 7-203, Massachusetts Institute of Technology, Cambridge 39, Mass. Entered as second-class mail matter at the post office at Concord, N. H. Copyright, 1946, by the Alumni Association of the Massachusetts Institute of Technology. Three weeks must be allowed to effect changes of address, for which both old and new addresses should be given.

Publisher • H. E. LOBDELL

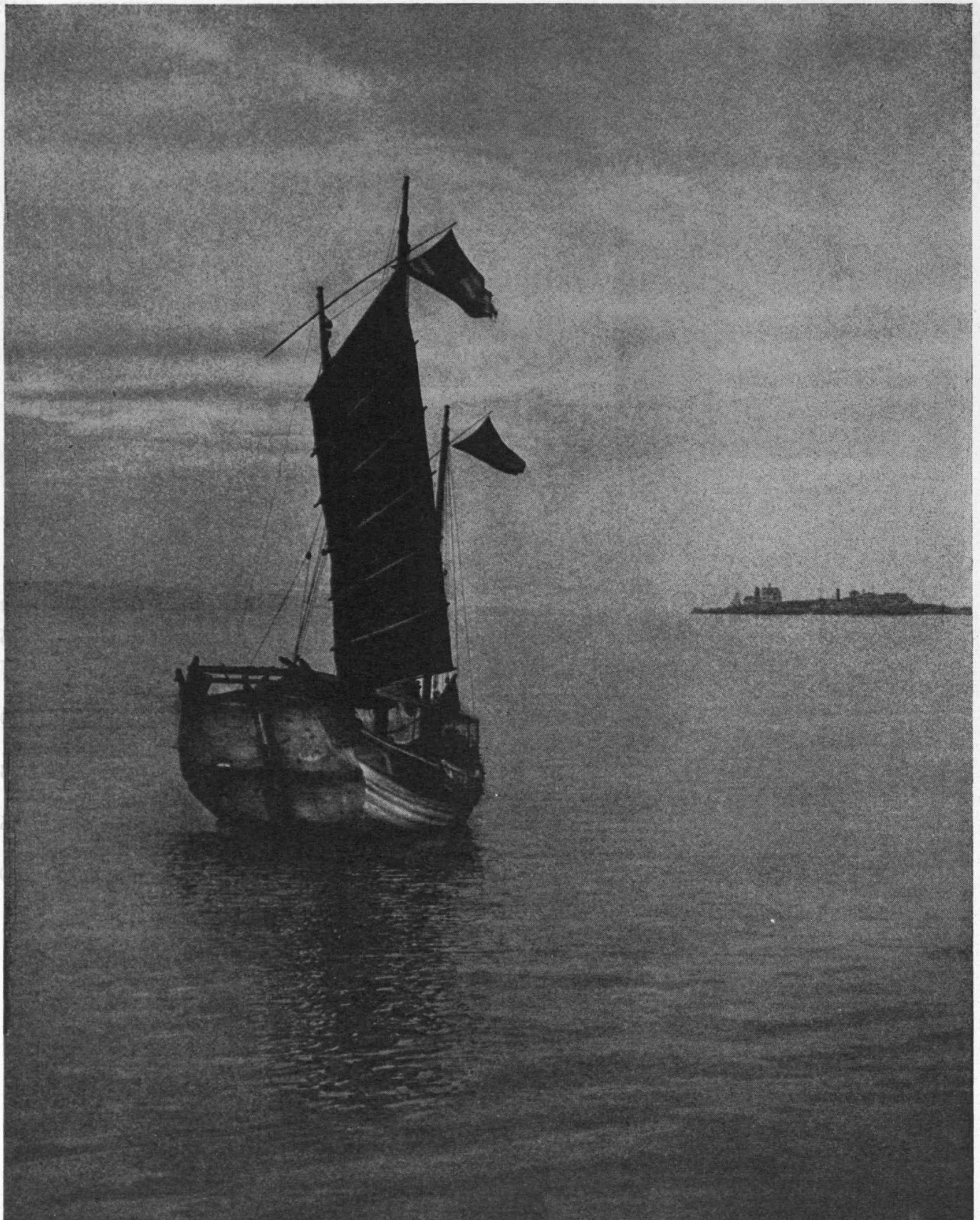
Editor • B. DUDLEY

Business Manager • R. T. JOPE

Editorial Associates

PAUL COHEN
F. W. NORDSIEKJ. R. KILLIAN, JR.
J. J. ROWLANDSWILLY LEY
E. R. SCHWARZ
F. G. FASSETT, JR.P. M. MORSE
D. O. WOODBURY

Staff { Editorial: THEODORA KEITH, JEAN PAGE
Business: MADELINE McCORMICK, RUTH KING



Mildred Hatry

DAWN SAIL

THE TECHNOLOGY REVIEW

Vol. 48, No. 6



April, 1946

The Trend of Affairs

The Innocent Bystander

A SURVEY of the bird population on Midway discloses that two species of birds there have probably been driven into extinction because of military operations on that island. The number of gooney birds has been reduced by 50 per cent, the Bonin Island petrels, which once had half a million representatives, now have about 25,000, and only three out of 2,000 noddy terns remain. Observers on other islands have reported how bomb concussions left the ground littered with dead birds. Although the importation of rats by military ships into previously uninfested islands may prove to be the most enduring damage resulting from the war, as far as the birds and other small forms of life are concerned, the covering of these tiny land forms with acres of runways, roads, buildings, gun emplacements, and similar bric-a-brac was also an acute inconvenience. Airplanes taking off and landing at some of the more exotic bases set up during the war have killed not only birds but also enough varieties of other fauna to have stocked an elaborate zoo.

War didn't do the chickens of Europe any good either. The poultry population of Holland, for example, was reduced in five years, mainly because of lack of fodder, from 26,000,000 to less than 4,000,000. Because the Dutch culled their flocks with considerable judgment, however, the registered breeding poultry farms lost only 70 per cent of their stock, while the loss for the entire country was 85 per cent. The Netherlands, therefore, finds itself in a position to build up its flocks to a higher level of effectiveness than ever before. Although Holland is known best for its dairy products, Dutch exports of eggs in pre-war years slightly exceeded in value its exports of milk and milk derivatives.

In the oceanic realm, war actually benefited at least two creatures. Because of man-power shortages and its classification as a luxury, the lobster was less assiduously pursued, at least along the Maine coast. Whaling in the Antarctic, where the great bulk of whales are taken,

virtually ceased during the war years. Compared with the 35 floating factories operating in far southern waters during the 1938-1939 season, only nine factory ships are currently at work. The fleet is no longer cosmopolitan, as six of the ships are Norwegian and the remainder are British. Oil yield, however, is expected to be about a third of a normal year's production.

The five-year holiday has undoubtedly halted the sharp reduction in the number of whales noted in certain areas, but it has not necessarily reversed the trend materially, in the opinion of biologists, because whales breed only once every two or three years and have a single offspring. More encouraging is the fact that international agreements for limiting the size of catch, which started in 1937, are being continued with an increasing number of restrictions. On the face of it, the present treaty would limit the total production of oil to less than two-thirds of the 1938-1939 catch. The absence of Japanese ships, notorious for their indiscriminate slaughter of all sizes and types of whales, and the strict regulation of their activities in home waters, are also optimistic factors.

Third Horseman

BY FREDERIC W. NORDSIEK

IN the wake of War ride Famine and Pestilence, and closely following these Three Horsemen is the fourth, Death. Wartime and postwar outbreaks of pestilence not only emphasize the thinness of the crust of civilization upon which rests modern public health but also draw attention to the possibility of world-wide epidemics, because a focus of communicable disease anywhere on the earth may act as the spark from which such a pandemic could spread like a forest fire.

War has ridden away from Europe, but Famine and Pestilence remain behind. Even those diseases controlled by sanitation of the environment, diseases that were almost eradicated from the United States decades ago,



Wind Witch

Mildred Hatry

have flared up in war-torn areas abroad. Typhoid fever, for example, may be eliminated by sanitation of foods and water supplies and by proper disposal of sewage and other wastes. Yet these fundamentals of public health have so sadly retrogressed in sections of Europe that typhoid fever has recurred widely. Last fall the incidence of typhoid fever in Germany was at 30 times the normal rate.

Other diseases controlled by environmental measures are those spread by insect vectors; in this connection it must be acknowledged that the war stimulated the development of powerful new insecticides, such as D.D.T., and that availability of these substances immeasurably improves the prospects for ultimate elimination of insect-borne disease. Yet in the war-affected areas, sanitary measures, such as prevention of mosquito breeding, have so deteriorated that insect-borne infection has increased. Mosquito-spread malaria is epidemic in Greece and is the predominant cause of disability in the Mediterranean basin. Present plans for malaria control there call for equipping planes to spray with D.D.T. the marshland areas where mosquitoes breed; it is hoped that this procedure may drive malaria from Greece within a year.

By body and garment dusting, D.D.T. is also used against louse-borne typhus fever to kill the lice that convey this disease. Through such use of D.D.T. typhus has been practically eradicated from those areas of Europe occupied by British and American authorities, but this disease continues to occur in Bulgaria and Greece and is a serious problem in many parts of the Balkans.

Plague is another infection spread by lice, but since reservoirs of this disease may be maintained in rodent populations, plague elimination goes beyond insecticide application to involve rat control. At present, plague is serious only in Malta, but it is considered to be a potential menace because North Africa and Palestine remain foci of plague infection.

Smallpox is amenable to control by a specific and entirely effective measure, vaccination. Application of vaccination against smallpox depends upon education, legal compulsion, and availability of medical services; social forces currently are so lacking in Italy that smallpox has now become prevalent there.

Education, legislative measures, and provision of medical care, regardless of ability to pay, are likewise fundamental to the control of venereal diseases. It is not surprising, therefore, that the war has wiped out all of the progress made against venereal disease in Europe during the previous 20 years. Most of the war-affected continental countries have experienced a three- to ninefold increase in syphilis, and this infection has increased twentyfold in Germany.

Finally, there are those communicable diseases for which available control methods are less specific than they are dependent upon segregation of infectious sufferers, improvement of living standards, and prompt application of medical measures proven effective for cure or arrest. Important among these are tuberculosis, which has greatly increased in many (Concluded on page 384)

Personal Responsibility

In an Age of Power and Collectivism, Individual Qualities Are Recognized as of Basic Importance, for No Group or Nation Rises Above the Level of Its Individual Members

BY HAROLD W. STOKE

BACCALAUREATE ADDRESS

BACCALAUREATE exercises are among the few occasions in life which give us an opportunity to pause and look in two directions — the direction from which we have come and that in which we are going. They afford us a moment to get our bearings and to enjoy the contemplation of studies completed, of professors conquered. These are occasions in which parents may beam in unashamed pride over the achievements of offspring whom they have cajoled and spanked into good citizenship. Today, in the dignity of caps and gowns, all members of a graduating class look alike — those who are here by the skin of their teeth and those whose minds are so far ahead that their willingness to remain with us was a form of tolerance.

Such moments as these, moments of pride and superiority, are all too few. I suggest we enjoy this one to the full, that we encourage these graduates and their radiant parents and friends to make the most of the successful conclusion of a great adventure. We may be serenely confident that the qualities of mind and character which have brought about these achievements will insure with equal success the accomplishments of the future.

Yet the future is insistent and compels us to turn, however reluctantly, from the review of present accomplishments to the "undone vast." We find ourselves called upon to contemplate the world in which we live.

Of the myriad facts from which we must select, in order to be intelligent about our world, there is one which seems to me to be more central than all others. It is the problem of what to do about the use and management of power. Ours is an age of power. A long series of discoveries has taught us to unlock billions of units of sheer physical energy from coal, oil, chemicals, and tumbling water. Little by little, but with accelerating speed, these discoveries have extended our control of power. Today, we stand in the presence of men who have brought that extension to emphatic climax with the release of energy from the atom itself. How completely our world is shaped by the organization, the management, and the application of power! Economically, it is the central factor in the production of goods; socially, it is the central factor in the determination of the well-being of people; politically, the use and management of power is the central problem of government, domestically and internationally.

But it would be presumptuous in this environment for me to elaborate upon the miracles of science. Mine is not an inquiry as to what further marvels science may have in store or what new dominions it may give us. Rather I wish to ask what, in an age preoccupied with the organization and management of power, is likely to happen to us as persons and as individuals?

We are told on all sides that the day of individual freedom, happiness, and responsibility is over and that the age of collectivism is upon us. The world, it seems, requires the strength of organization. To obtain it, we must definitely shift the focus from the individual to the groups to which he belongs. Certainly it requires no special insight to understand that far more organization is necessary to carry on life as we live it now than was required even a few years ago. No matter what we do these days, it seems necessary to unite with others in order to do it. If we want to work we must join a labor union, go to a government employment office, get a certificate, or register and take out a license. If we wish to go into business another series of regulations faces us. Even our minds and virtues are organized, for if we want to read a book apparently we must join a book club, and if we feel charitable we must do our giving through the community chest. And the services we enjoy, whether cashing a check, sending a package, or getting our laundry back, are dependent upon a vast association, in which each individual must do his small part in order that the great chain of social organization shall not be broken. This tendency toward the minute organization of life has been vastly exaggerated by the war. Yet in accepting it all, we are merely acknowledging the necessity for social organization superior in its claim to our own individual preferences.

What is true of ourselves in our communities is becoming true of nations. Our groping effort toward international organization is an attempt to recognize the fact that nations possess power which is too great to permit us to leave its disposition to the caprice or design of each one individually; thus it follows that, whether in the community or among nations, as our power is enlarged it imposes a need to find ways of organizing its management and use.

Many people view with alarm the lasting effects upon our minds of these developments. The over-organization of life, they say, destroys the individual. It paralyzes his capacity to make choices; it prepares his mind for dictation, creating an actual distaste for the responsibilities and virtues of freedom. It fosters a feeling of personal helplessness and fatalism toward the conditions of life which surround him. How can a member of a labor union with a hundred thousand members do other than resign himself to dull conformity, not caring whether his work is better or worse than that average for which his union's policies and wage scales are devised? How can a voter in a state with two million others keep from being overcome with a sense of his insignificance and resist the temptation to acquiesce in whatever happens? So we arrive at the great paradox that we must organize to make life richer, and thereby we endanger the richness of individual life.

There are many thoughtful people who see the protests and escapes of current living as desperate efforts to overcome this threat of individual extinction, who say that each of us must find some way of asserting his separate existence against absorption into the anonymity of a social organization. Sometimes I share these reflections and carry out a small personal rebellion, which takes the form of wearing a necktie the color of which clashes with every other item of my apparel. Unknowing persons may see in this gesture nothing but a painful lack of good taste. What they do not sense is that there for a day blazes the banner of a dangerous world outlaw, who is inwardly glowing with satisfaction at his successful defiance of the encroaching forces of social compulsion. But even such petty triumphs have never survived social pressures more than 24 hours.

It seems to me that we find ourselves in a stage of development in which we are learning those ways in which human life can be enriched, if we band together, and those ways in which it may be impoverished. We have not yet learned what aspects of human life can never be dissociated from individuals and transferred to groups and what aspects of living are better if transferred to groups and taken away from individuals. Let me try to speak more clearly.

Suppose a ship in a harbor needs to be pulled closer to shore. If you have a rope long enough for a thousand men to pull on it, you can add together the strength of the thousand men and make them collectively a thousand times more effective than each could be individually. But now suppose these thousand men are adrift in their ship on the open ocean. They have instruments which, if interpreted properly, will give them their bearings. Yet it so

happens that all of these men have learned mathematics only as far as it is taught in the eighth grade. You may call all of them on deck, and by forming an organization you say, "We shall unite our knowledge, and collectively we shall know a thousand times as much mathematics as each of us does individually; thus we shall be able to read our instruments and to find out where we are." Unhappily, it does not work that way. You cannot collectivize a knowledge of mathematics. By adding together the knowledge of all of the men you have no more knowledge among them all than you had in any single one.

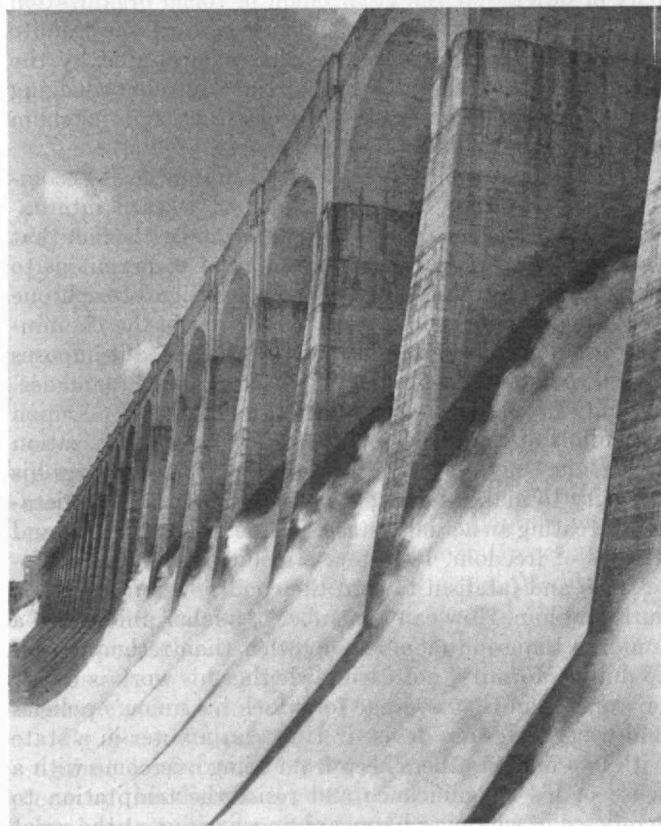
Now, suppose that on board you find a stowaway and discover that he has studied enough trigonometry to read the tables of navigation. The mathematics available to the thousand men through the knowledge of one man is greater than that contributed by all the others.

This kind of human mathematics deserves a great deal of reflection, for by it we see the impossibility of collectivizing the attributes which can exist only in individuals. The fact of the matter is that you can not add together the attributes and qualities of personality. These include practically all of the virtues and vices of which human beings are capable. You can not add wisdom by uniting people. Two wise people are not twice as wise as one, any more than two ignorant people are twice as ignorant as one. Two good men are not twice as good as one, or two bad ones twice as bad. This is the fallacy underlying the oft-quoted statement "A hundred million people can't be wrong." They can be, and they sometimes are, for a hundred million people may actually be less wise than a single person, since wisdom is not a matter of numbers. The basic argument for democracy is not that the masses are wiser than individuals but that we have no clear way of knowing who the wise men are.

We may pursue the matter still further. Merely by organizing or combining people we cannot increase the amount of love or hate, joy or sorrow in the world. One person is capable of knowing and feeling all there is to know of what the whole human race is capable of knowing and feeling. We have all been shocked at the dreadful atrocities of this war. The fact is that when one person has been starved or tortured to death, there has already been endured all that the human race is called upon to endure. The crime is complete in the single case. In a million cases it is but repeated a million times for there is no sum total of human suffering. Anyone who has tried to write a letter to a mother who has lost a son in this war knows what I mean. The fact that a million mothers have lost a million sons does not add one whit to the sum total of suffering. There is merely the fact that each mother has suffered what every other mother has suffered, and each of them has suffered all there is to suffer.

It is important that we grasp the true implications of this perhaps strange human mathematics. If there is any warning in the present war crimes trials, aside from how badly life can be mismanaged, it seems to me to be this: Regardless of its magnitude, the variety of its forms, and its range, social organization will always be dependent upon the qualities, virtues, and attributes which are inseparable from some individual. It is to be hoped that the implications are not lost on the plaintiffs any more than upon the defendants.

As a society we must still learn this truth, and we may suffer serious losses during the fumbling, groping days in which we are learning it. As (*Concluded on page 386*)



Keystone View Company

A long series of discoveries has taught us to unlock from coal, oil, chemicals, and tumbling water billions of units of sheer physical energy.

Return to Religion

Objectivity of Judgment and Actions, Single-mindedness, and Moral Conduct Are Urged as the Most Effective Means for Meeting the Problems of Society

BY KARL T. COMPTON

VALEDICTORY ADDRESS

THIS is my last message to you as students and my first message to you as graduates. I trust, however, that this forgathering is only the beginning of a lifelong frequent contact between you as Alumni and us of the Corporation and staff of this great institution. For it is one of the fine characteristics of an educational institution that its influence continues down through the years; in fact, it frequently happens that as a graduate grows older in experience he comes more and more to appreciate the value of his education and of the personal contacts established in college with his fellows and his instructors. Conversely, we of the staff, who have come to know you more or less as students and who up to the present have looked upon you as promising raw material worth working over, will realize our greatest satisfaction from watching your achievements and success. We shall come more and more to look upon you as colleagues and turn to you for counsel and help as your generation gradually takes over from us the responsibility for the advancement of science and its practical applications to achieve a better life for all.

Most of you will first undertake a tour of duty in our national service in our Navy. Some of you may decide to make this fine service your permanent career, and the others will then start civilian careers with enlarged vision and maturity. Many of you will start your life's work at once or, alternatively, undertake postgraduate study in preparation for some highly specialized professional career. Many of you will return to the foreign countries whence you came to this institution for your professional education. You will find much to do on your return. To all of you the Corporation and Faculty of the Massachusetts Institute of Technology wish success and happiness and offer our continued friendship and co-operation. From you, in return, we solicit your help as we carry on the continuing task of trying to prepare the ever replenishing ranks of young men and women to take in turn their places in the forward march of civilization.

But what will our civilization be like tomorrow? With your scientific training you can yourselves make many of the predictions. You know something of the advance of technology, and you have some basis for extrapolating this advance into the future. Even in my lifetime the progress has been enormous. My childhood vocabulary did not contain the words automobile, airplane, radio, radium, x-ray, or vitamin; yours did not include streamline, television, plastic, or atomic energy. All these are new tools which will be significant in the world of tomorrow, and the trend of science, teamed with man's ingenuity, leads without question to still newer things in your lifetime.

Let me quote from a radio broadcast which I made almost exactly five years ago:

"What will our America be like tomorrow? I look to see a race of Americans made healthier by medical progress and better living conditions. I look to see them gainfully employed in industries now undreamed of or only in the embryo stage. I look to see wealth distributed, not by taking it away from someone who has a good share but by creating it, for that is the proven way of science. I look to see people living in homes of new designs in convenience and attractiveness, based on new structural materials and located in groups planned for effective community life. I look to see great cyclotrons operating as chemical factories instead of laboratory instruments. I may see great power plants in which the fuel under the boilers need not be replenished in a thousand years. I shall certainly expect to see rain and fog eliminated from the list of hazards to travel by sea or air. These are only a few samples of what America's future looks like to me."

Now, only five years later, stop to think of the progress on all these lines: It is present-day evidence of the rate of progress toward the things that are ahead. As to a healthier race of Americans, we have penicillin and D.D.T., and we have the great new attack on cancer so largely made possible by our good friends, Alfred P. Sloan, Jr., '95, and Charles F. Kettering, and the medical profession. As to new homes, we have the greatest opportunity in all history, both on account of the pressing need and the technological advance in materials and the art of planning. Only the accumulated trash of obsolete building codes and jurisdictional entrenchments of the building trade unions stand as obstacles to a tremendous business in this area. Cyclotrons and related devices are now operating as chemical factories. In the atomic bomb development we have built boilers which can create heat without the need for replenishing the fuel for a thousand years. In radar we have a device which has largely eliminated rain and fog as hazards to air and sea travel. Though these devices remain to be developed more fully and applied widely to peacetime uses, they are no longer speculations; they are here.

Most encouraging are the enlightened public interest in these matters of technological progress for the public benefit and the leadership undertaken by the Federal Government to promote them. Although sponsored by both our late President Roosevelt and by President Truman, the program is distinctly nonpartisan and is being handled with equally devoted interest by both Democratic and Republican members of the appropriate Congressional committees. Two Senate bills, one by Senator Kilgore and the other by Senator Magnuson, provide for

the establishment of a national science foundation. The general plan has been supported by all but one of the many scores of witnesses who have testified before these committees. Senator Saltonstall from Massachusetts has played a significant role in helping to iron out differences between the two bills and to modify them to meet essentially all the criticisms and constructive suggestions regarding details. I personally believe that the most recent joint draft of these bills will win wide support and, if enacted, will prove to be a milestone on our nation's path of progress.

The other great legislation to promote technological progress is that to establish an Atomic Energy Commission. The May bill in the House and the McMahon bill in the Senate have essentially the same objective, *i.e.*, to promote as well as safeguard the development of atomic energy for security and for peaceful purposes. Some de-

tails still have to be worked out, but the legislation is certainly in the "must" category, and its enactment will clear the way for progress in this field of almost unlimited technological possibility.

Truly, you go out into a world whose future is full of opportunity in the fields of technology!

But there are other things, not so new or easily handled as scientific discovery and engineering progress, which you will encounter in the world of tomorrow. These are the problems of society as differentiated from the problems of technology. Although their form and setting may change from decade to decade, in their fundamentals these issues go far back into the fundamentals of human nature. Let me give three or four illustrations.

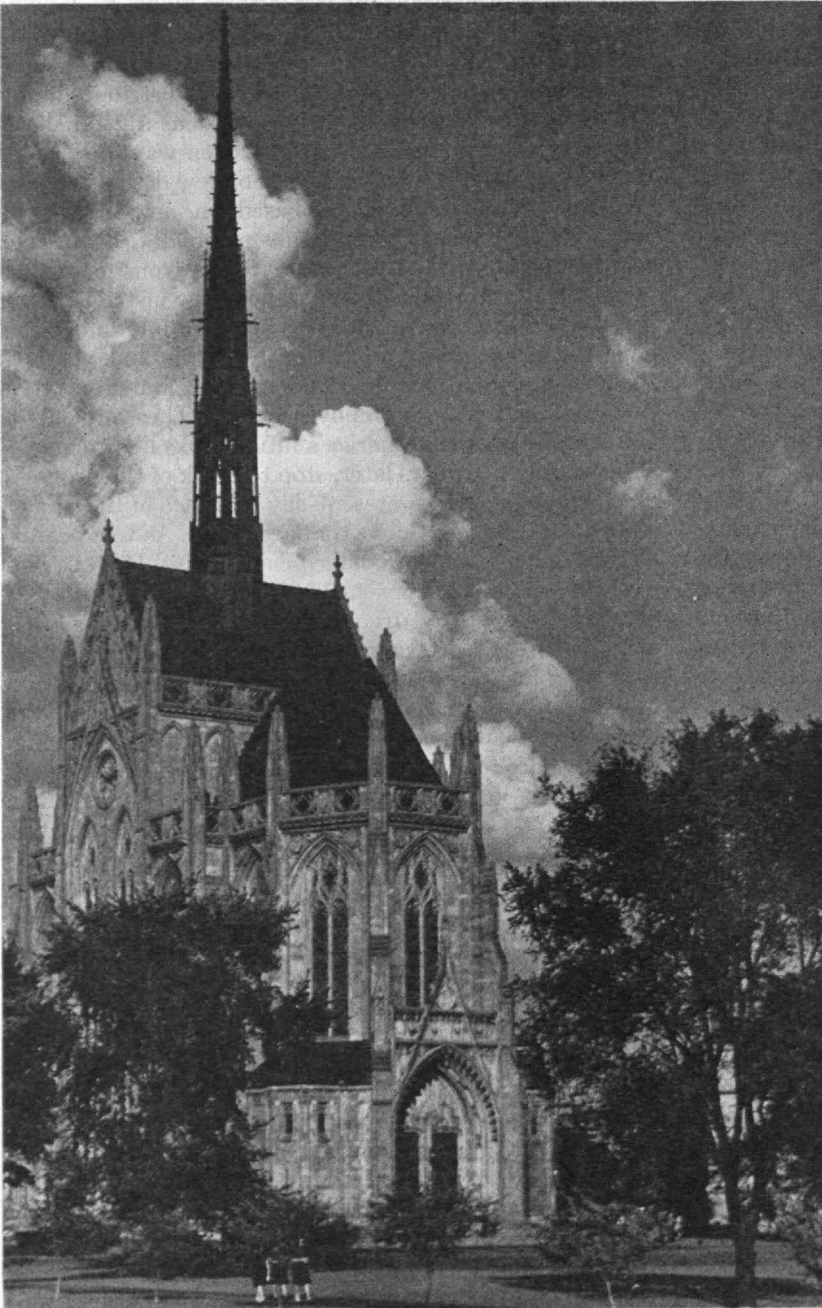
Take first the labor problem. I well remember a lecture which I heard as a student, at a time of widespread labor disturbances, on the subject, "Labor Unions in Ancient Rome." Wage scales, hours of work, limits on production, strikes, arbitration — all were active issues then as now.

Take next the problem of capital and exchange. Old King Croesus has for ages been the symbol of wealth. "Rich as Croesus" has been a descriptive phrase for centuries. In the ancient Phoenician city of Sardis, on the river Pactolus in Asia Minor, he built his palace at the junction of the great caravan routes from east to west and north to south, and he issued coins which became the basis of international exchange. His was the first world bank. Now we are creating still another.

Take again the problem of famine and relief. In ancient Egypt Joseph interpreted the Pharaoh's dream and built the granaries in which to store food in preparation for the seven years of famine which were to come. Today, in every newspaper, we read of famine in Europe as a result of war or in India because of crop failure. Not all the advances of communications, transportation, and agriculture have kept safely ahead of the resulting increases of population. Here is a problem still to be solved by both technology and sociology. Henry Wallace's ideal of an "ever normal granary" is still to be achieved, and it is as true now as in Biblical times that, "The poor always ye have with you."

Most important of all, consider the scourge of war. Man has been fighting ever since he left the jungle, and doubtless before that. There was a time when nations could stand a 30 years' war or a hundred years' war. We can no longer do that; war has become too total and too terrible. This time half the world was wrecked, and the rest was sadly weakened in only a few years. If war comes again we can be sure of one thing: The destruction and suffering will be far greater in much less time. The greatest problem of all, therefore, is how to preserve peace.

Problems like these will change in detail as technology advances, but they will continue to face us in the world of



Heinz Chapel

J. O. Fitzgerald, Jr., M.D.

A trait which is more important than any other and which really includes them all is religion.

tomorrow. Our technological progress can alleviate some of them by creating and distributing food and wealth and by generally raising the standards of living. Many aspects lie far deeper — in the fundamental character of human beings.

In my address to the graduating class of Worcester Polytechnic Institute on February 23, I ventured to urge certain traits of character which seem to me to be essential if we are ever to achieve success and happiness and peace in this world of ours. I would recommend these traits to you as I did to those graduates.

The first is objectivity in your judgments and actions. To be objective is not a natural human trait. The natural thing for any person to do when confronted with a situation is to think first of the effect on himself, then probably on his family, business, or other personal interests. Objectivity is a trait of mind which can be gained by training and experience. For example — and I say this with some hesitation — scientists or engineers should be more objective than lawyers, because they are continually called upon to evaluate situations and draw conclusions on an entirely impersonal basis, whereas in many of their activities lawyers are required by their profession to consider the interests of their clients, and politicians have to consider the interests of their constituents. I recall an interesting illustration of this difference. Early in the 1930's the Congress passed the so-called Public Utility Holding Company bill. In the preamble to this bill there were listed about 10 real or alleged abuses of the public utility holding company system. The bill then proceeded to outline a program for the elimination of public utility holding companies wherever possible and to impose restrictions on them where their elimination was not feasible. If the problem had been put up to engineers, their typical approach would have been to analyze the abuses or disadvantages of the holding company system and to draw up a parallel list of advantages. The procedure then would have been to try to seek a solution which would minimize the abuses and maximize the advantages. The approach which was followed in drafting that legislation was the subjective one, based upon the conviction that the public utility holding company system should be abolished, rather than the objective one of trying to find the best over-all solution.

I have seen the objective spirit develop, month by month, in myself and in my colleagues in connection with service on various committees, such as the one which used to award the National Research Fellowships in physics, chemistry, and mathematics. Every newly appointed member of such a board initially reacts to propositions in terms of his own acquaintance and interest. Gradually, however, a good man for such a position will develop an objective point of view in which he evaluates each proposition, not in terms of its reaction on projects or institutions in which he has an interest but rather in terms of the general progress of education, advancement of knowledge, and development of young men.

If a man's reaction to a situation is determined on the basis of his own personal gain or loss or on the basis of advantage or disadvantage to some group in which he may be interested, rather than in terms of the larger welfare of society, then he will not do his full duty to society and may even become a menace. The congressman whose votes are always with the party or whose actions are determined by political advantage rather than statesman-

ship is typical of one type of national hazard. The businessman whose stand on every question of social reform is decided by its effect on his next year's balance sheet, and whose reaction can always be predicted with this effect in mind, is another hazard. The extreme isolationist and the "America First" is still another. Of course, I would not say that considerations of personal or group interest are improper or even unnecessary. What I want to bring out is that a man's over-all judgment and action on important matters should not be determined primarily by self-interest, and usually in the most important situations it is highly important that self-interest be as completely obliterated as possible in the making of judgments.

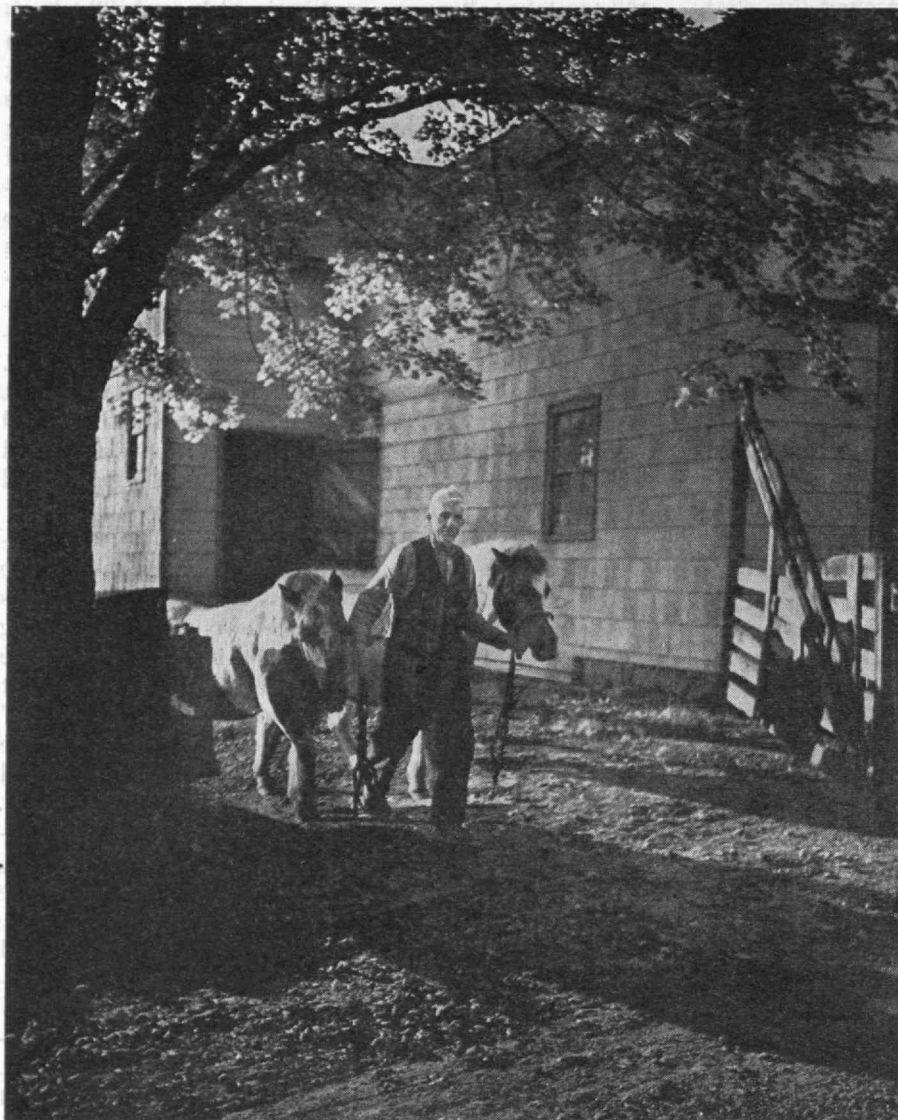
Objectivity is a very important trait; unfortunately it is far too rare. Men who have it, combined with general qualities of intelligence and competence, are valuable and in great demand. They are the antithesis of the selfish and prejudiced. Try to be objective in your thinking.

The second trait is single-mindedness. By being single-minded I do not mean having a single-track mind. The best example of single-mindedness in our generation was the general attitude of the people of our country during the past war. Then every good and true man had just one decision to make: "Is such and such a procedure the best thing which I can do to aid in the winning of the war?" Our national strength and our success in the war were due to the predominant extent to which this spirit motivated the actions of the people and the groups of our nation. Now, in the time of peace and in the midst of reconstruction and the establishment of a future sound economy, we shall certainly succeed if we can mobilize the same nearly unanimous spirit in which our actions will be determined by the answer to the question: "What can I do which will be most effective in promoting the re-establishment of peace and prosperity?"

Without advocating communism, I think we can appreciate the effectiveness of single-mindedness in Russia. The great objective of Soviet Russia for at least the last 15 or 20 years has been technological development to make of itself a great industrial nation and thereby to provide a greatly increased standard of living for the population. In announcing the next five-year plan, Stalin states as the objective the raising of the standards of living of the laboring classes, and he states as the two procedures for achieving this objective, first, scientific research and technological development, and second, reduction in the cost of production. The strength of Soviet Russia, I believe, lies in two factors: soundness of this program and the faith and enthusiasm of the people for its achievement.

If our own nation — with a very great head start — should set high above all other economic goals more and cheaper production of the goods which people want and, until this goal is well on the way to achievement, relegate to second place the disputes about distribution of the wealth we are not now producing on adequate scale, we ourselves would be in a better position to attain what is desired by everybody, from the laborer to the capitalist, from the little businessman to the politician.

I now come to a third trait which is more important than any other and which really includes them all: religion. I am not thinking of any particular brand, or creed, or religious doctrine but rather of an attitude of mind and spirit which is the theme of a book which was a best seller about 10 years ago, "The Return to Religion" by Henry



Morning on the Farm

Mildred Hairy

I look to see wealth distributed, not by taking it away from someone who has a good share of it but by creating it.

C. Link, a psychologist. I mean motivation by some cause or objective which is more powerful than one's own self-interest. When a man feels that a cause or an objective is so important that it must have his allegiance and he feels this sense of duty so strongly that it takes priority in influencing his actions, then this cause or objective becomes for him a religion in the sense in which I am now using the word.

To take a relatively simple and immature illustration, let us consider a player on a football team. If he is a grandstand player, thinking of himself in relation to his play and his teammates, then he is not the man I am talking about. If, on the other hand, he has such loyalty and team spirit that for the time being his self-interest is wholly subordinated to the success of his team, then he exemplifies in this simple way what I mean here by the fundamentally religious spirit.

Of a scientist we sometimes hear it said that science is his religion. By such a statement we mean that he is so wholeheartedly devoted to his science that he will make his personal decisions and determine his course of action in the interests of science rather than in his own personal interest.

Another man will have devoted his life to the cause of the Negro, or to the better health of children, or to the cause of good government, or to the advancement of peace, as, for example, by working for the success of the United Nations Organization.

Religion does not necessarily mean that a man must choose one of these causes and pursue it to the exclusion of other interests. Very frequently there are temporary jobs, such as helping to raise money for a community fund, or taking an assignment on a committee, or helping a neighbor in an emergency. The most outstanding and vivid example in our time is that of our soldiers and sailors who were so impelled by loyalty to our nation and to their fellows that they endured hardship, risked death, and in so many cases gave their lives in the nation's cause.

There are innumerable examples of such objectives, but they all have one thing in common, namely, that the individual is impelled by a sense of duty or an enthusiasm for a cause to such an extent that, if necessary, he will sacrifice his personal comfort and interests in order to help in this cause.

The world needs men and women with this type of religion. If enough of us had it and practiced it, we could transform our nation and our world from strife to peace, from poverty to abundance, from worry and fear to hope and confidence.

So your personal success and happiness, that of our nation, and that of all nations, in the last analysis depend

on character — the basic honesty, stability, and unselfishness suggested by such words as objectivity, single-mindedness, and religion. Are we willing to pull together? Are we farsighted and determined enough to make the necessary sacrifices and to plan and work hard to achieve this better world? Have we the will and the long-range good sense to resist that vicious tendency to try to get something for nothing? Have we wisdom to handle our good heritage, courage to defend it, and will to improve it?

I believe that we do have these traits to a hopeful degree. I know that we all can strengthen them by conscious effort. We may be sure that the world of tomorrow will be something somewhere between hell and paradise, depending on the degree to which mankind generally has the character to practice these virtues.

As you of this graduating class enter upon your careers with knowledge and skill and enthusiasm, may you also carry into them a single-minded devotion to truth and to the spirit which, as in religion, puts service for the good of others above selfish gain. By so doing, you will contribute your part in shaping the world of tomorrow into a better world than the world of yesterday or of today. May God be with you as you go out into this world.

Today's Problem

The Field of Human Relationships, Like That of Technology, Evolves Rapidly. Both Require Constant Study if Man Is to Achieve the Fullest Possible Life

BY JAMES H. DOOLITTLE

COMMENCEMENT ADDRESS

GRADUATION is generally thought of as the point where education stops and the application of things learned begins. This belief is only partially true. No professional man — be he doctor, lawyer, or engineer — ever finishes his education. It is essential to his usefulness and success that he remain up to date in his specialty and in allied subjects. This demand requires continued study after graduation. Such study is carried on individually and through meetings, through association and discussion with contemporaries.

Neither scientific knowledge nor its practical application is static, nor is the social environment in which we live. They are in a constant state of change and development, in some cases and directions slowly and in others, very rapidly. If you leave M.I.T. realizing the fact that you know something of today's conditions and possibilities and but little of tomorrow's, and if you are prepared to continue your own study and development in order to keep pace with the changing world, you will do well. If you are willing, through greater application and effort, to lead in some aspect of these changes, you will do still better. If, however, you think the training represented by the degree awarded you today is anything more than a good starting point, if you are under the misapprehension that you are now equipped to deal with the affairs of your generation, you are already doomed to disappointment.

I make these positive assertions with the assurance of the only scientific basis of prophecy, which is short-term extrapolation of the curve of past experience. I have been away from the petroleum industry only five and a half years, and still the changes which have taken place in this fairly stable industry during that short time are revolutionary. Since my return to the Shell Oil Company all of my available time has been spent in studying what has transpired technologically during my absence: new refining processes, catalysis, alkylation, isomerization, polymerization, new products, and new applications for old products. While flying over Oklahoma and northern Texas recently, I was amazed to see sheets of dense black smoke covering the entire countryside. This smoke came from the finely divided carbon obtained by burning waste gases in the presence of cold plates in carbon black plants. All of these plants had been erected since I left the country in 1942. The supply of carbon black is a new demand upon the petroleum industry, but its production is being very inefficiently carried out, as indicated by the carbon lost in the smoke. There is a challenge to you industrial chemists here.

The curve of scientific development is not flattening out; its steepness is increasing.

The outstanding scientific development of recent years is the harnessing of atomic energy for destructive pur-

poses. The experimentation leading to this development has all taken place in my lifetime, as radioactivity was discovered in the same year in which I was born. By 1920 the knowledge of radioactivity acquired by the Curies, Sir Ernest Rutherford, and their pupils had established some extremely interesting scientific facts about the very heavy unstable elements of high atomic number in the periodic table, and at least one useful application had been developed, namely, radioactive therapy of cancers and tumors. In the 1920's Rutherford and his pupils discovered that various chemical elements can be artificially transmuted by bombarding them with high-velocity particles from radioactive materials or from high-voltage accelerating machines. In the 1930's this work was enormously extended with the use of the cyclotron by Professor Ernest O. Lawrence and his pupils in this country, and in 1939 uranium fission was discovered almost simultaneously by scientists in several countries. Then in 1945 we created the atomic bomb. Our scientists and engineers have demonstrated the vast storehouse of energy which resides in uranium and thorium



Problems of greatest importance in aviation are mechanical design, airports, and weather.

and which awaits only further scientific and engineering developments to bring your generation into what may be called "the atomic age."

Some of you are electrical engineers or physicists and know something of the way in which electronics underlies the modern telephone, radio, radar, and innumerable automatic devices. Yet this art, practically speaking, has come into being during my generation. I was a small child when the electron was discovered by Sir J. J. Thomson in the Cavendish Laboratory in England. Before that time there had been nearly 200 years of scientific observation of strange phenomena of conduction of electricity in the air and other gases, but both explanation and useful application were lacking. After the discovery of the electron in 1899, scientific developments and the practical application of new knowledge progressed rapidly. By the time I entered college, radio broadcasting had begun. It was during World War I that the first radio communication between airplanes and the ground was established in a very crude and unreliable manner. New scientific knowledge and more refined practical applications have developed in the intervening years with startling rapidity, and today electronics is still one of the most progressive of our technological arts.

I can best illustrate my point by drawing from the field with which I have been most intimately associated, namely, aviation. To date, this field has been a development of my generation, but aviation is still in its infancy, and your generation will carry it to much greater fruition.

On December 17, 1903, the Wright brothers made their first heavier-than-air flight. Inventors, stunt fliers, a few scientists and engineers, and the inevitable promoters carried on this infant art through the next decade. In 1912



H. Armstrong Roberts

*It is not only the world of technology which is steadily evolving.
The same trend exists in the field of human relationships.*

M.I.T. established the first course in aeronautical engineering in the United States. It was headed by Professor Jerome C. Hunsaker, '12, who again today is head of that Department. This course was originally a postgraduate course, and the first master's degree was awarded in 1915. My own postgraduate degrees were obtained in this course in 1924 and 1925. The first bachelor's degree was awarded in 1927.

It was Dr. Hunsaker who designed the first airplane to fly across the Atlantic Ocean, the old Navy NC-4. Now the entire world is crisscrossed with a network of commercial air lines. Air has become the medium through which our most effective military arm operates. Only a month ago, a new Army jet-propelled airplane made a transcontinental flight from Long Beach, Calif., to La Guardia Field in New York, a distance of 2,470 miles, in four hours, 14 minutes, and 26 seconds, attaining an average speed of nearly 585 miles an hour.

While on the subject of aviation, let me discuss a few of the things I see ahead to challenge the courage and skill of your generation.

Of the several advantages of travel by air, speed is probably the greatest. Substantial increases in the speed of conventional aircraft through improved aerodynamic design and jet propulsion may be anticipated in the near future. Greatly increased resistance in the vicinity of the speed of propagation of sound has temporarily limited the speed of conventional aircraft, but piloted, winged, jet-propelled craft are now under construction. These planes are designed to pierce comprehensibility and operate at Mach numbers greater than one, and they will approach speeds of 1,000 miles an hour. These experimental planes may be expected to teach the lessons necessary to permit efficient military and commercial operations at these and higher speeds.

Pilotless, wingless, gyro-stabilized, rocket-propelled air weapons have already achieved speeds of around 2,500 miles an hour, and we may anticipate that the air weapons of the future will also be radio controlled and radar directed. They will be capable of traveling great distance, at supersonic speeds, in the stratosphere; they will probably have an atomic war head and may even employ atomic energy as a propulsive force. This is tomorrow's military problem.

The employment of such air carriers for commercial air transport is the day after tomorrow's problem.

Today's primary problem is increasing the safety and reliability of conventional aircraft. Reliability, in general, means ability to adhere to schedule.

The three principal problems to be solved today are those of mechanical operations, airfields, and weather.

The mechanical problems associated with flight are gradually being solved, and a higher degree of mechanical perfection is being achieved. The problem of acquiring more, bigger, and better airfields poses a point of paramount importance to air development, but it is a personal or political rather than technological problem. The greatest deterrent to the safety and reliability of aviation is our present inability to predict and combat weather.

In air operations in both the European and the Pacific theaters of war, weather was the number one enemy. Enemy fighters were number two, and enemy flak was number three. During Von Rundstedt's Ardennes breakthrough, in late December, 1944, when the Eighth Air Force flew regardless of weather (Continued on page 388)

The Story of Radar

Engineers Extended Useful Communication Spectrum 200 Times, Devised Means for Detecting Ships and Planes at Night, and Developed the Loran System of Navigation

BY L. A. DU BRIDGE

ALUMNI DAY BANQUET ADDRESS

IT is a great pleasure to address the Technology Alumni this evening. In fact, tonight I almost feel like an M.I.T. Alumnus myself. I "entered" the Institute in 1940. "My course of study" was somewhat longer than that of the present graduating class for it was completed on January 15, 1946, and in February I resumed my duties at the University of Rochester. Thus, like you Alumni, I have had the pleasure of several years at one of the most remarkable institutions in the world. I can assure you that it is a real pleasure to return and talk to you this evening.

The words "Technology" and "radar" are inseparably linked, and the experiences of the past five years will live forever in the memories of many men and women.

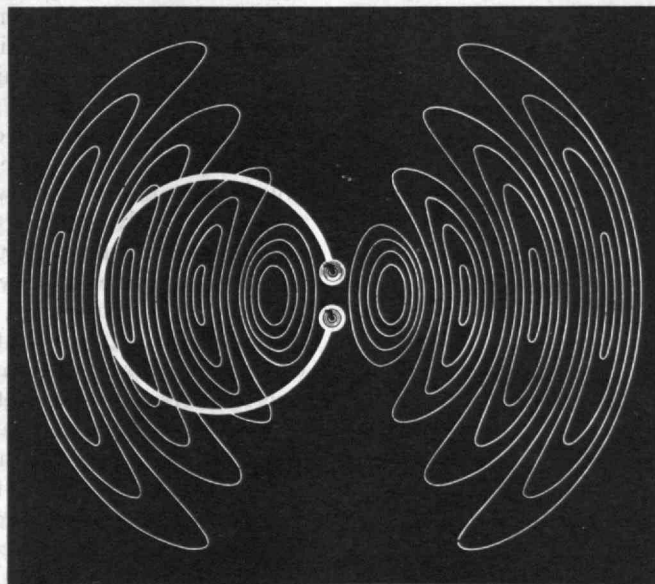
I want to tell you a little of what went on during the war at the Radiation Laboratory, the largest aggregation of scientists ever to be assembled to work on a single problem.

The Radiation Laboratory was organized in 1940 with a couple of dozen scientists. At that time it did not appear that the problems confronting us would require a large personnel. But the staff of the laboratory grew until in August, 1945, when Japan surrendered, there were 3,900 employees, including 1,500 women. Between 150 and 200 of our staff were overseas, working with the military staffs in England, France, Italy, Germany, and in the Pacific. At the close of the war the Radiation Laboratory was spending almost \$125,000 a day. Its activities required half a million square feet of floor space in Cambridge, and we had the entire Bedford airport for our use in the development and testing of airborne radar equipment. By the end of the war we had established branch laboratories in London, Paris, and Manila as well as 12 field stations throughout the United States. The Radiation Laboratory had the largest telephone switchboard in Cambridge. The number of its visitors averaged 100 a day, about half of whom were Army and

Navy officers; the others were co-operating scientists from other universities or representatives of manufacturing plants who worked with us in the development of radio equipment for the armed services. The laboratory needed and had a large travel office. In addition to the many trips which the staff made throughout this country, Radiation Laboratory personnel made more than 250 round trips overseas. Yet in spite of the enormous amount of traveling required in our work, we had but one fatal casualty, which occurred in Salt Lake City in 1942.

The result of the active program carried on at the Radiation Laboratory from 1940 to 1945 was that microwave radar, unknown in 1940, had developed into a \$2,000,000,000 industry by 1945. The Institute was the center of the vast co-operative program of radar development from which this new industry evolved. The Radiation Laboratory worked intimately with many technical schools and with industrial representatives throughout the United States. Because of our semi-government status, we were in contact with all agencies working on radar problems here and abroad and acted as a clearinghouse and nerve center in all microwave radar work during the war.

Why was the Institute chosen as the agency for carrying out this program? From one point of view it might seem natural that M.I.T. should have been selected as host for the Radiation Laboratory. The chairman of the National Defense Research Committee, under which the laboratory was originally established, was Vannevar Bush, a member of the Institute Class of 1916 and formerly Vice-president of M.I.T. President Compton and President Conant of Harvard were also members of N.D.R.C., and although we would hardly expect Dr. Conant to urge M.I.T. as his first choice, we might expect that he would have welcomed the chance to have the Radiation Laboratory in Cambridge! Frank B. Jewett, '03, President of the National Academy of Sciences and a member of the M.I.T. Corporation,



Symbolically expressed above is the discovery by Heinrich Hertz that electromagnetic waves a few centimeters long could be produced experimentally. The development of practical radio communication was forced to take place at much longer wavelengths because of limitations of early equipment and techniques. A return to the microwave region in which Hertz worked in 1888 has been made possible by the methods and equipment which have been developed as a result of radar research. A vast new portion of the spectrum has thereby been opened for practical use.



Radiation Laboratory

was also a member of N.D.R.C. Alfred L. Loomis, also a member of the Corporation, was chairman of the microwave committee, and Professor Edward L. Bowles, '22, was its secretary.

But in spite of this array of M.I.T. men (possibly because of it) the Institute was not originally considered as the location for the Radiation Laboratory. In 1940 a search was made for a place suitable for undertaking the projected research. Our research workers would be required to develop airborne radar systems and equipment. It was suggested that an Army airfield might make a suitable site for a laboratory. That idea was soon discarded when it became evident that the necessary research facilities could not be obtained at any existing field. The radar development program would have to be conducted in or near a reasonably large population center. With virtually all radio activities in the triangle enclosed by Boston, Chicago, and Washington, there were excellent reasons for choosing a site in the East. The new center for radar development would have to be in touch with, but preferably not too close to, Washington. Finally, we required an institution which could handle large research projects, one which was accustomed to the many problems peculiar to research activities and which understood what research really meant and entailed. After surveying all possible sites for the new Radiation Laboratory, Dr. Bush stated to Dr. Compton: "Karl, there is no other place for the establishment of the microwave laboratory but the Massachusetts Institute of Technology." It was in this way that your institution came to house the world's largest co-operative scientific undertaking.

But although M.I.T. was host and housekeeper for radar research, the personnel came from all over the

◀ *Microwave early warning radar sets, provided with plan-position indicators, are capable of portraying the positions of aircraft against a background of the surrounding terrain. The introduction of such equipment into warfare requires new concepts of military tactics.*

country. The director came from the University of Rochester. As associate directors, F. W. Loomis of the University of Illinois and I. I. Rabi of Columbia University were selected to aid in the administration. Its staff was composed of scientists from almost every university in this country and from some in Canada, England, and France. The laboratory was in the truest sense a co-operative enterprise of scientists from the Allied countries.

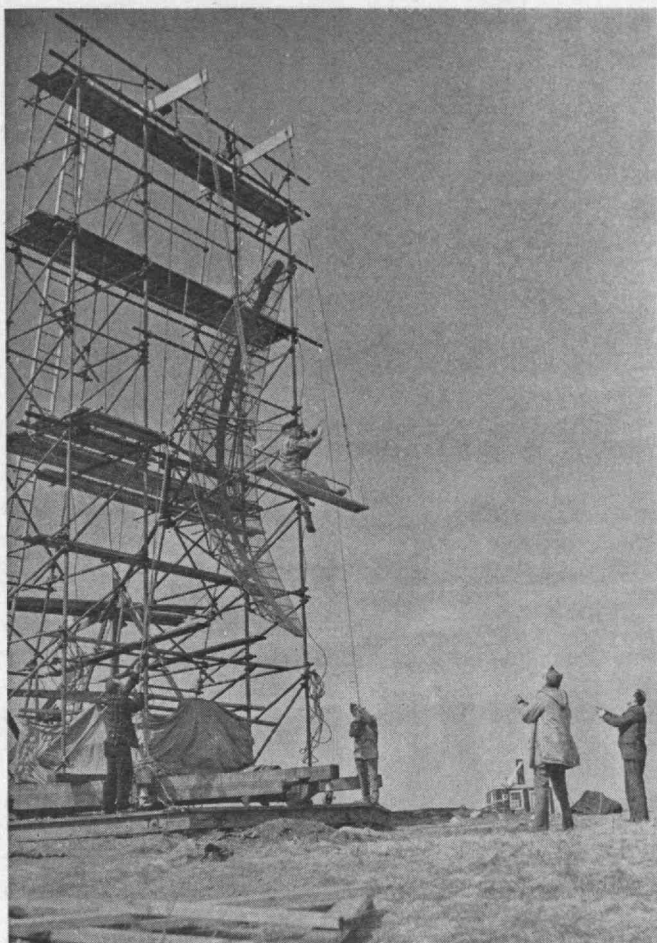
But the M.I.T. contribution was all-important. For without the farsighted management of President Compton and Vice-president Killian the Radiation Laboratory could not have been operated as it was. In none of the many other laboratories which I have visited has there been the spirit of co-operation which existed at the Radiation Laboratory — the spirit of Technology.

Now, what can I say about the work of the laboratory? You are not interested in the technical details, and even if you were, an adequate discussion of this phase of our work would take more time than could be allotted. In fact, the technical aspects of the work of the laboratory will be published in 30 volumes. All that I can do, then, is give a few examples of specific accomplishments.

Our first real job came in November, 1940, from Great Britain. A mission of British scientists visiting this country at that time urged the United States to participate with England in the development of scientific devices for military use. England was then being subjected to bombing by German planes, and the British badly needed radar detection devices. The need was especially great for radar equipment in their night fighters for detecting the approach of German planes. In asking for the aid of this country in the development of radar equipment, British scientists brought along with them the means for making such systems possible. This device was the cavity magnetron, a tube permitting the generation at high powers of radio waves 10 centimeters long, corresponding to a frequency of 3,000 megacycles a second. The tube enabled us to produce kilowatts of power at frequencies which previously could not be generated, except in minute amounts in the laboratory.

Six months after the cavity magnetron was brought to the Radiation Laboratory, we had in operation an experimental radar set for night fighters which would detect enemy bombers at a distance of several miles. The production version of this set eventually became standard equipment for American and British night fighters.

The next problem was that of protecting shipping along the Atlantic Coast against the German submarines. These submarines would recharge their batteries at night when they were surfaced and carry out their destructive attacks submerged during the day. Suitable radar would allow our planes to search and attack the surfaced U-boats at night. Several of the experimental night-fighter radars were hurriedly modified for this purpose and installed in Army bombers. The first kills soon followed, and eventually the work of the night patrol became so effective that the enemy submarines were driven from our waters. Those first sets used for this purpose, custom-built at the Radiation Laboratory, were erratic and un-



Radiation Laboratory

certain in operation, and the services of a Ph.D. were required to keep the sets working. But we supplied the Ph.D., and the sets worked. Again the production models became standard equipment for Army and Navy patrol bombers.

The United States Navy was also very much interested in radar. Many ships had equipment for airplane detection, but it was not suitable for detection of other ships when operating in fog or darkness. Suitable sets for this use were developed. These were rushed into production and were first used most brilliantly in the early Pacific naval battles. The Navy also had need for night fighters equipped with radar sets, and the laboratory developed a set for this purpose.

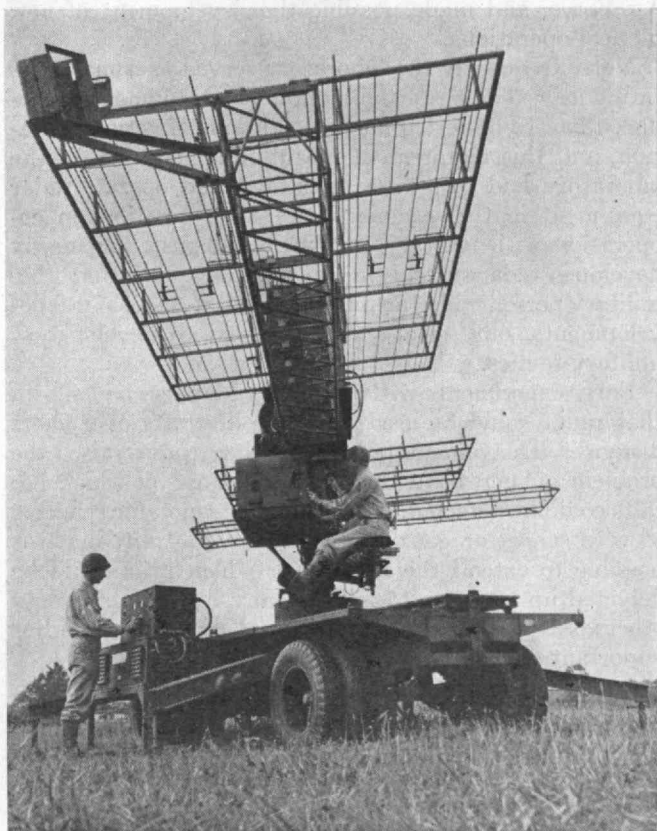
In Europe the German aircraft remained virtually untouched during the early stages of the war because radar to control anti-aircraft guns was still undeveloped at that time. The need arose for radar equipment which could locate and accurately follow enemy planes at night. The radar problems were tackled in the Radiation Laboratory, and the Bell Telephone Laboratories worked on electronic computing devices. In 1944 anti-aircraft guns, operated in conjunction with radar locating systems and gun computers, shot down 85 per cent of the buzz bombs which the Germans sent over England. Anti-aircraft radar

Mobile trailer-mounted radar set for operation. Equipment such as this set may be regarded as the practical embodiment of ideas, many of which were originally viewed as fantastic, which originated in the Radiation Laboratory. Radar sets which could locate and track aircraft for distances up to 200 miles were in operation by the early part of 1944.

◀ Erection of radar antenna. The equipment produced by the Radiation Laboratory had to be tested under conditions of actual operation, and this requirement often necessitated that personnel of the laboratory set up, maintain, and even operate radar equipment.

equipment of this type was used in Italy and in the Pacific. This same set was later modified for use in the control of our own aircraft on tactical missions, and in this role the set was widely used in the invasion of France and Germany.

The value of our early radar equipment and the success with which sets were used in combat gave us courage and hope. It even caused some of us to become fantastic in our visions for the future of radar equipment. One of the members of the Radiation Laboratory, for example, imagined a radar set with an antenna 100 feet wide, mounted on a rotating tower and designed for locating planes at distances of as much as 200 miles. While this fantastic idea — at least we thought at the time it was fantastic — was being hatched in one branch of the laboratory, more power was being obtained from our high-frequency generators in another part of the laboratory, and in still another branch great progress was being made in increasing the sensitivity of receiving sets. These two developments made it possible to reduce greatly the size of the antenna originally proposed. The fantastic radar locating system began to assume a higher degree of rationality, and by early 1944 we already had in operation radar sets which could locate and track aircraft for distances up to 200 miles. This set later became of extreme value in locating German buzz bombs and at a still later date became very popular in France when Germany was invaded. Eventually nine sets were made in the Radiation Laboratory for use in Europe and the Pacific. These sets were used with phenomenal success, particularly by the Ninth



International News Photo



Radiation Laboratory

The Institute was the center of a vast co-operative program of radar development from which a new industry was developed. From a modest beginning, in which a few dozen scientists were at work in the fall of 1940, the Radiation Laboratory grew to 3,900 employees when Japan surrendered. The photograph shows members of the Radiation Laboratory at a convocation in the Great Court, shortly after the Japanese surrendered, listening to Dr. du Bridge outline plans for the orderly conclusion of the work of the Radiation Laboratory.

Air Force, and made possible the development of new tactical operations.

Not infrequently the laboratory served as a manufacturing as well as a research organ. The equipment it produced had to be tested under conditions of actual operation, and this requirement meant that personnel of the laboratory had to set up, maintain, and operate radar equipment in the various theaters of operation, in co-operation with military authorities. In installing newly developed radar systems in combat zones and instructing military personnel in the proper use of latest technical developments, our scientists also helped to develop new military tactics.

Early experiments with airborne radar sets had shown that radar could be used to locate life rafts over short distances. The value of radar for such purposes raised the problem of increasing the effective range by which life rafts could be detected. A simple folding metallic reflector of wire screen or gauze, mounted on the raft, made it possible to extend the range over which rafts could be detected up to 10 or 15 miles. Many lives which would otherwise have been lost were saved by this simple but important development.

Another development which came from the Radiation Laboratory was a new system of navigation, known as loran. In this method of navigation, synchronized radio pulses are transmitted from a group of radio stations, the positions of which are accurately known. Specially designed receivers pick up these synchronized pulses and

measure the time difference for signals arriving from each of two transmitters. The position of the ship or plane is thus determined. Networks of loran stations have now been established which make it possible for the navigator to determine his position at any time with an error of not more than about a mile. Loran systems operate satisfactorily in all kinds of weather and may be expected ultimately to replace navigation methods dependent upon the stars, which often are invisible.

Before the war the minimum wavelength which could be used in radio or radar was about five feet. Such wavelengths were much too long for providing sharp beams required for radar. A beam can be made sharp by increasing the size of the antenna or by reducing the wavelength. Radar in an airplane must have a small antenna, so short waves were essential. As it turned out they also had many other advantages. At the beginning of the war, for example, the British wanted to use in the development of their radar systems radio waves five inches long instead of those five feet long. Through the program of wartime research conducted at the Radiation Laboratory and elsewhere, methods have been devised which make possible the generation of electromagnetic waves only half an inch long, and the end is not yet in sight.

It is worth noting that the Allies outstripped the Axis partners in developing radar techniques and in producing tubes for generating very short waves. The Germans paid little attention to these problems since they believed it impossible to develop ultrashort (*Concluded on page 382*)

Ensigns in the Making

V-12 Program Viewed as Most Inspiring Experiment in Democratic Education. Graduates Attained High Average and Received Commissions and Degrees in Less Than Three Years

By W. H. BURACKER

NAVY ADDRESS

THIS is a unique commencement in several ways, as you are a unique class in many ways. This is the first peacetime commencement at M.I.T. since 1941; yet the graduating class is predominantly military, and the bulk of its college experience has been colored and conditioned by the war.

As senior naval officer at M.I.T. I shall devote my brief remarks primarily to the V-12 students in the class, whose college careers since July 1, 1943, have coincided with their period of enlistment because most of them entered college at the same moment that they entered active service in the Navy. Most of them have not known what a normal civilian college life is.

You are unique in that most of you have followed an academic program wholly prescribed by the Navy, whereas those V-12 students who have gone before you were permitted to follow majors of their own choice in regular courses set by the Institute.

You are unique in that this is the first time, to my knowledge, that the Institute has granted its undergraduate degree for study in curricula not established by the Institute itself. And we of the Navy are indeed proud and happy that M.I.T. so highly regarded the Navy's program that it accepted it as fulfilling requirements for graduation. Such acceptance, however, is only one of the many examples of the extremely cordial relationship between the Institute and the Navy which has been manifest throughout the whole period of V-12 training. At no time were you made to feel that you were not an integral part of the Institute. In every sense of the word you were M.I.T. men, and now you are about to become her Alumni. You were permitted to enjoy the Institute's regular sports programs and take part in extracurricular activities on the same basis as were civilian students.

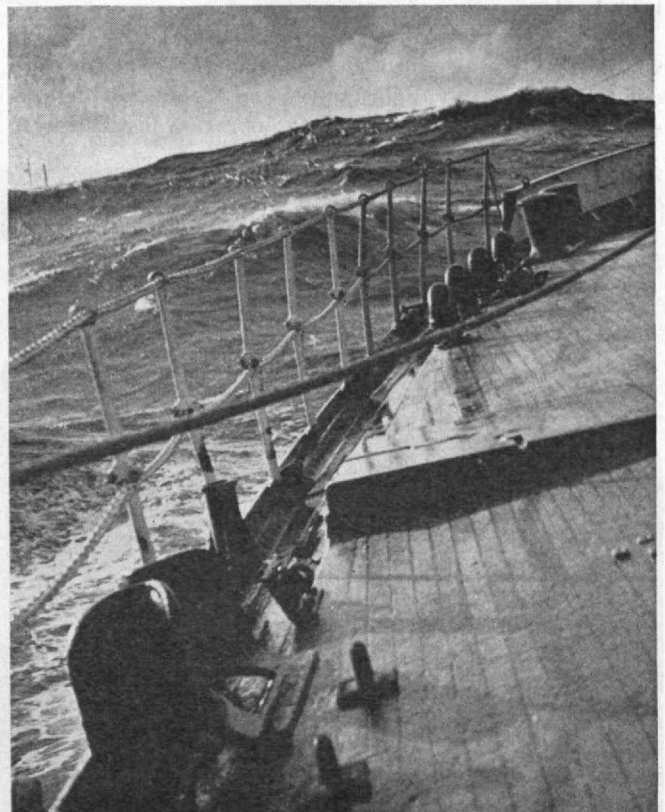
It has been the policy of the officers under whom you have served to interfere as little as possible with your normal undergraduate life, to encourage hard work, and yet from time to time to remind you, as members of the armed forces on active duty, to think of those responsibilities you had to the Navy as well as to yourselves. That you accepted these responsibilities is shown in the high level of conduct and the above-average academic records many of you have achieved. You were asked to assimilate a difficult technical education in two and two-thirds years instead of four. That you have done so and maintained a better than average standard bespeaks the success of the entire program. We are proud that you, as a class, broke all records in the Navy for the officers classification test, setting a mark never before achieved by any group in the country. This success crowns an exhaustive cooperative effort on the parts of both you and your professors. We are proud that M.I.T. has supplied the Navy

with 700 officers from the V-12 program alone, each of them fully trained in an engineering specialty.

The time comes now to weigh and evaluate for future reference the benefits of the V-12 college training plan. I do not speak of the material advantages accruing directly to you and your families as a result of the Navy's financing your education and maintaining you during the war years, nor of the debt you owe the American people for this incalculable privilege. You have been a part of one of the most inspiring experiments in democratic education. Let us see what has been accomplished by it.

First of all, the time saved in your training has been of great benefit to the Navy. We needed technically trained officers, and we needed them in a hurry. We got them.

You were under Navy discipline and were organized in military units. You have tasted the life of an enlisted man and should know by this time how the enlisted man feels. This knowledge cannot help but make you better officers. Also, you have absorbed in daily contacts with your officers and petty officers (*Continued on page 384*)



United States Coast Guard

You leave the Institute as commissioned officers in the Naval Reserve. You will go aboard our country's ships.

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

Of Things to Come

Midst the Good Fellowship of Peace, Technology and Her Alumni Turn to Problems of the Future

TECHNOLOGY'S wartime achievements in research and technical training, the part which her graduates are destined to play in the world's reconversion from militarism to civil and industrial peace, and the Institute's increasingly important and expanding role in science and engineering loomed large in the minds of those who partook of Alumni Day, commencement, and related festivities on February 23 to 25. The first Alumni Day and commencement since the fighting war ceased was marked by relief at being once more in a world at "peace"; but it was also marked by concern for the future welfare of the world's citizens and a distinct awareness—if not apprehension—of the difficulty and magnitude of the job ahead. But highlighting the confidence with which the future was faced, the festivities were also marked by the commissioning of 195 graduates as ensigns in the Naval Reserve and by nuptial ceremonies following commencement, when at least 12 members of the graduating class took brides.

Beginning with the activities of Class Day on February 23, and extending through baccalaureate Sunday and commencement day, February 24 and 25, the good fellowship and parental pride which the occasion justified were

mingled with gravity and concern, indicating that thoughtful minds are devoting much effort in attempts to attain a richer and more complete life.

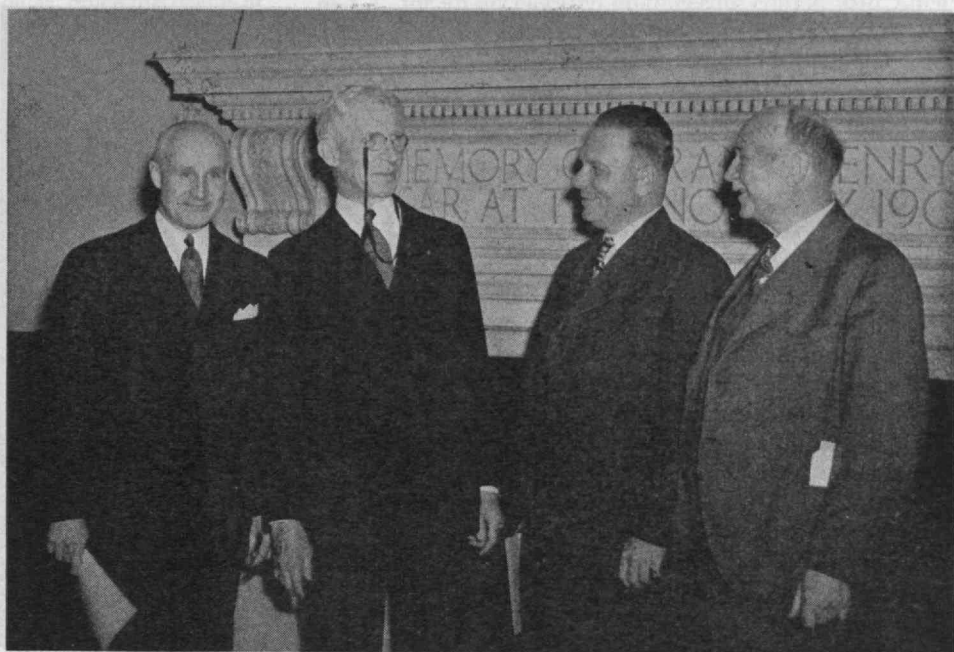
As Alumni Banquet speaker, L. A. du Bridge, formerly director of the Radiation Laboratory, reviewed the important work which had transpired at that laboratory from November, 1941, until February, 1946. President Compton, in his Alumni Banquet address, outlined the conditions which confront the Institute with the ending of hostilities and acquainted his listeners with plans now in progress for a greater Technology of tomorrow. As in past years, Dr. Compton's annual survey on the state of affairs at M.I.T. was a highlight of the banquet program.

Addressing those who were making the transition from students to Alumni, Lieutenant General James H. Doolittle, '24, in his commencement address looked forward with the graduates and interpreted some of the manifold opportunities confronting them, particularly in the aviation industry. In his Navy address, Captain William H. Buracker, U.S.N., '30, expressed the conviction that the peace which had been so dearly won would be safeguarded by the Navy V-12 graduates, to whom commissions as ensigns were awarded together with their bachelor's degrees. In his valedictory to the graduates, President Compton saw hope for a brighter future in a return to a moral code of ethics in dealing with the peoples and nations of the world. It is The Review's pleasure to be able to present these addresses in this issue as separate articles or as part of this report.



Members of the graduating class in an informal chat with Vice-president James R. Killian, Jr., '26, on Class Day. From left to right: James S. Craig, Secretary-Treasurer and Beaver Orator, George A. Ley, first marshal, Herbert J. Hansell, President, John A. Gunnarson, third marshal, all of the Class of '2-46, and Dr. Killian.

Alumni who took active part in Class Day exercises included, in the usual order, A. Warren Norton, '21, President, Alumni Association, E. Arthur Baldwin, '96, 50-year Class speaker, Raymond A. St. Laurent, '21, 25-year Class speaker, and Charles E. Locke, '96, Alumni Secretary.



Approximately 1,150 Alumni, Alumnae, and guests attended the Stein-on-the-Table Banquet at the Hotel Statler on February 23. Included in this jovial gathering were more than 300 members of the Class of 2-46, who had been inducted into membership in the Alumni Association in the afternoon in exercises at Walker Memorial. As has been the custom for several years, members of the graduating class attended the banquet as guests of Alumni Hosts, who this year numbered more than 500 Alumni and staff and Faculty members. Larcom Randall, '21, chairman of the Alumni Day Committee, and Frank R. Shaw, '24, chairman of the dinner committee, were able to relax and enjoy the banquet, every detail of which went off perfectly as the result of much hard work and co-operation on the part of the various and able committees responsible for the management of Alumni Day affairs.

... Class Day ...

Opening the three-day festivities were the Class Day exercises, held on the afternoon of February 23 in Walker Memorial. Alumni and guests were welcomed by George A. Ley, Jr., 2-46, chairman of Senior Week. E. Arthur Baldwin, '96, representing the 50-year graduates, delivered an address to those assembled, choosing as his topic the special nature of the national debt. Raymond A. St. Laurent, '21, passed on some excellent thoughts regarding situations which were certain to be encountered by members of the graduating class in years to come. As president of the Class of 2-46, Herbert J. Hansell transferred the class ring to Alex E. Halberstadt, Vice-president of the Class of 6-46, acting for the class President, David G. Black, Jr., who is no longer at the Institute. James R. Killian, Jr., '26, Vice-president of the Institute, received from Mr. Hansell a \$25 check as token of the gift of \$5,000 from the Class of 2-46. In making this class gift, Mr. Hansell expressed the hope that the fund might be used to defray the expenses for portraits of prominent Faculty members, the portraits to be hung in the new library already planned.

In customary manner, the graduating class applied for

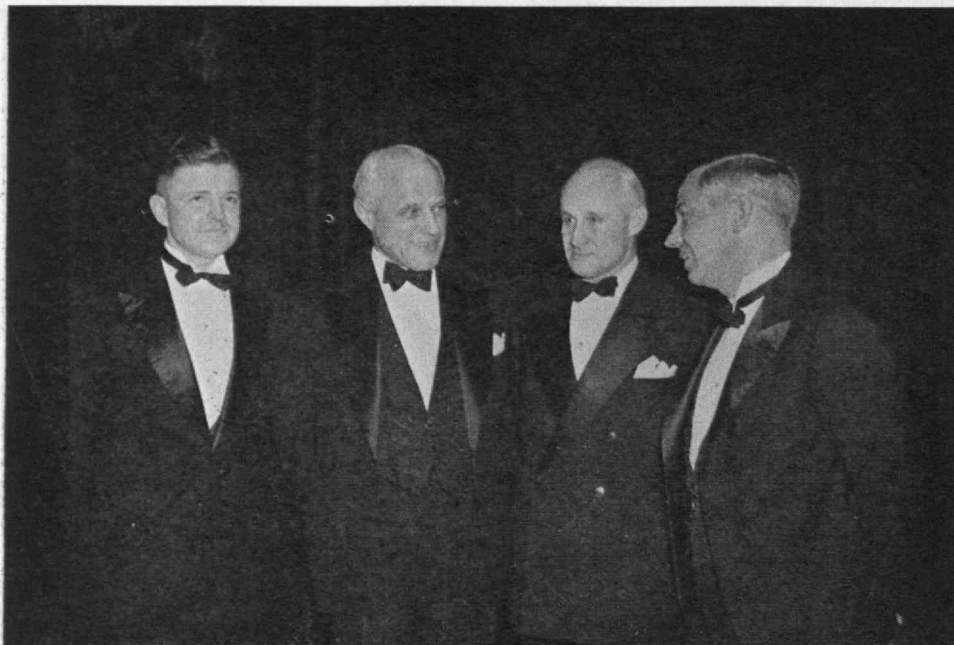
admission into the Alumni Association by presenting a skit depicting actual or hypothetical events at M.I.T. during their student days at the Institute. The Class of 2-46 presentation, entitled "Curses on Zilch," was an outstanding performance and was in keeping with the generally high scholastic record which the Class had achieved during its two and two-thirds years' stay at the Institute. We shall return, in a later section of this report, to do justice to this student produced and acted four-act comedy. James S. Craig, Secretary-Treasurer and also Beaver Orator of the Class, expressed the thoughts of his classmates by stating that they felt honored at having been able to attend M.I.T., that they were happy in anticipation of their forthcoming commencement, and that they hoped that the Class had left a good impression — a hope which has been fulfilled amply during the past three years. A. Warren Norton, '21, President of the Alumni Association, presented the class banner to President Hansell, as proof of the Class's admission into the Association; the ceremonies were then concluded with an afternoon tea dance.

... 25- and 50-Year Graduates Heard From ...

As representative of the Class of 1896, celebrating its 50th anniversary this year, E. Arthur Baldwin injected a note of seriousness in his address at Class Day activities. He said, in part:

The Class of 1896, veteran 50-year graduates of the M.I.T., is proud in the privilege of participating in these Class Day exercises. In its name I salute the young men and women who, in their diplomas, are to have testimony of their assiduous and successful years of study. I am grateful to my classmates for the high honor of appearing on the roster of the speakers who address this distinguished audience. To you all, I give my thanks for your courtesy in allowing me to speak to you.

My salutation to the graduating class has particular emphasis, because our Class of 1896 was the last one to have the privilege of receiving its diplomas from the hands of the man whose memory is honored in the name of the building in which this Class Day is being celebrated.



Photographed at an informal gathering at the banquet were Harold W. Stoke, President of the University of New Hampshire, who delivered the baccalaureate address, President Compton, who spoke on reconversion plans for the Institute, A. Warren Norton, '21, President of Press Wireless, Inc., and President of the Alumni Association, and L. A. du Bridge, formerly director of the Radiation Laboratory, who has recently returned to the University of Rochester.

When President Walker first addressed us as freshmen, he admonished us in these words: "The Institute of Technology is a place for men to work, not for boys to play." This was not a kill-joy statement. The injunction was pointed, but you may be sure that we enjoyed ourselves thoroughly while we were students. We had all the happiness of youth. But I feel that President Walker wished us to realize that we had arrived at a kind of Rubicon; that we were passing that sort of frontier which marks the division between the selfish thoughtlessness of boyhood and the thoughtfulness that properly characterizes adult men.

That frontier is continually receding. We surmounted the pre-occupations of our undergraduate work and of starting a career. But these were not all. As participants in a democratic system of government, we must look to its governance. Government action is collective in its results, but our responsibility for these results is individual and personal. We cannot safely shirk this responsibility. We cannot discharge it if we are ill-informed. We cannot be informed about public questions if we are frightened by them. . . .

Raymond A. St. Laurent, representing the 25-year Class, spoke in a somewhat lighter tone. He took time to

look forward with the young graduates, whose careers are still before them, and at the same time he took leave to review a few pages which had been turned in the quarter of a century since he was a student at the Institute. In a jocular manner he pointed out some of the changes which may be expected to take place in 25 years, stating:

. . . I believe I wear the same size hat, shoes, and gloves that I wore 25 years ago, but there is the end of almost any similarity of form. Assume these extremities were held in a mold or vise, and this evening, after you have enjoyed the day's functions, you received an injection of 10, 20, 30, 40, or even 50 pounds of a solidified emulsion of fat and liquid. Tomorrow morning your resemblance to you of today might approximate me of today compared to me of 25 years ago. Also, you will see it is not entirely a matter of chest dropping and forehead being pushed back. At our 25th reunion this June, I expect to see numerous classmates who will say, "Your face is familiar, but I just can't place you." Fifty pounds and 25 years make a difference. Tonight at the banquet, look over the Class of 1921 and pick out you as you will look 25 years from now. Then you will say, "They can't do that to me!"



Turning out in grand style were members of the 50-year Class. Seated in counterclockwise order, at the near table, are F. W. Damon, R. A. Davis, P. B. Howard, F. C. Hersey, H. G. Grush, E. H. Robinson, H. E. Smith, F. T. Rundlet, and J. A. Rockwell. Talking with Mr. Hersey is H. E. Worcester, '97 (standing). At the far table, in counterclockwise order, are W. T. Dorrance, E. C. Jacobs, Bulter Ames, H. R. Hedge, and J. M. Driscoll. At the lower right is B. C. Batcheller, '86, seated at one of the Class of 1886 tables.

Oh, but it is so much fun growing older. Since life begins at 40, I only started to live five years ago. My life has started many times: When I first went to kindergarten, dancing school, and Sunday school Mother says I was a cute little tyke, and your mother says the same about you; when I was graduated from grammar school and high school; when I passed my examinations to enter M.I.T., and when I completed the first term and passed; when I made *The Tech* staff as advertising heeler and finally completed the first year; and then — the climax of graduation. You will experience, as I did, the joy of beginning life with your first job, your first car (all paid for, to drive when and where you please), your first \$100 earned and then your first \$100 saved; then finding The Girl and getting married. There is much to look forward to in your first home and your first child, then your first promotion. I could go on and on, but I won't. Right now I'm enjoying the life which began at 40. I'm looking forward to the life which begins at 60. . . .

... Class Day Play ...

Much to the delight of the audience — as well as of the members of the Alumni Association at which it was directed — the traditional petition for entrance into the Alumni Association was given in the form of a four-act comedy, written by Howard V. Perlmutter and Marshall J. Corbett, in which William M. Siebert as Joseph Robespierre Zilch was supported by an all-male cast of his classmates, including some prominently (if too obviously) upholstered to play feminine roles.

In brief, the class play dealt with the trials and tribulations of Joseph R. Zilch, a child prodigy whose future is read from a crystal ball by Observo, a soothsayer. During the soothsayer's revelation of Zilch's future, the three-year-old Zilch plays a prank on the soothsayer, thereby bringing curses upon himself. These curses bring Zilch into steady conflict with officers of the Navy, whose uniforms and general demeanor are a much greater attraction for the fair sex in the following years than are Zilch's snappy automobile and wad of bank notes. This state of affairs so disturbs Zilch that he applies for a commission in the Navy but is rejected. When his country goes to war, Zilch is reluctantly accepted as a candidate for the Navy's V-12 training, and he comes to

M.I.T. for an accelerated engineering course. But Zilch's studies are not up to par, and his chances for success, as judged by his examinations, are distinctly discouraging, to say the least, particularly when these difficulties are accentuated with an almost complete muddling of his Navy activities. During drill with the company commander one day, Zilch acquires an especially large dose of trouble and, when being reprimanded, breaks the curse when he is forced to utter his middle name — Robespierre. Upon breaking the soothsayer's curse, Zilch's luck changes; he is graduated with his class, is awarded his commission as ensign, and his popularity with the girls takes on a sudden and material improvement now that he has "stripes."

In the class play, which was of unusually high caliber, a large and co-operative cast took part, including a blue-jacket choir and a student orchestra. Richard J. Steele, as Lieutenant Commander Francis Curtis Cornfield, went through verse after verse of song, proclaiming in true Gilbert and Sullivan manner (as if he were part of *H.M.S. Pinafore*) that "Now I Am the Ruler of the Tech Navy."

... Good Fellows Get Together ...

That evening, when about 1,150 Alumni gathered at the Hotel Statler in celebration of the Alumni Day Banquet, a general air of good fellowship pervaded the ballroom, as it does when good fellows get together. Led by George Wheeler, soloist, directed by Orville B. Denison, '11, and with Earl Weidner at the organ, the banqueters unloosed their voices as the ballroom (and its overflow into the adjoining halls) resounded to class cheers, *Sons of M.I.T.*, and the *Stein Song*. During the evening Commodore William A. Sullivan, U.S.N., '17, whose work in raising the *Normandie* is well known, was called upon to receive a rousing cheer as ranking naval officer among the Alumni present.

The Alumni Day steins, designed by Henry B. Kane, '24, recalling the "days that were free from care," were oft raised during the evening and were covetously sought as reminders of another Technology banquet.

Several tables were required to seat members of the 25-year Class. At one of the tables were (counterclockwise from opening) E. T. Adams, H. M. Lane, H. C. Stillman, Harry Rosenfield, W. J. Hamburger, R. W. Haskel, H. R. Kurth, class representative on the Alumni Council, C. E. Thornton, W. C. Kohl, and C. A. Clarke, Assistant Secretary.





Joining in the festivities of the Alumni Day banquet were (in counterclockwise order) Mrs. A. Warren Norton, Mrs. Frank R. Shaw, Miss Julia M. Comstock, Mrs. Harold W. Stoke, Mrs. Karl T. Compton, Mrs. Harold Bugbee, Mrs. Leicester F. Hamilton, Mrs. Raymond A. St. Laurent, and Mrs. Larcom Randall.

... On M.I.T. and Radar ...

After the banquet, L. A. du Bridge, dean of science at the University of Rochester and formerly director of the Radiation Laboratory, spoke on the activities of the Radiation Laboratory during the war and his intimate association with M.I.T. during his directorship. Dr. du Bridge's article, "The Story of Radar," in this issue recounts the general activities of the laboratory from 1941 to 1946 and neatly supplements his article, written jointly with L. N. Ridenour, which treated some of the technical achievements of the laboratory, as recorded in the November issue of *The Review*.

... Affairs of M.I.T. ...

President Compton, who had given the commencement address at Worcester Polytechnic Institute earlier in the day and consequently could not be present at Class Day activities, was, nevertheless, on hand to deliver his customary address on the state of Institute affairs. His address, always eagerly anticipated by loyal Alumni, laid open plans for new facilities and new programs for M.I.T., including those for a new library, many additional research and laboratory facilities, and dormitories. He also announced the opening of Westgate, the housing project for married veterans returning to the Institute for study. Dr. Compton's address follows:

During the last five years the M.I.T. has thrown all its energies and resources into contributing wherever possible to the winning of the war. Now we intend with equal energy and single-mindedness to concentrate our efforts on building for the future. We do this with hope and confidence because we see ahead an era of peace, in which industry and the technological professions should be able to start off by tackling the great backlog of demands and opportunities which have been dammed up by the war, and in which there is the challenge to create new technological activities on the basis of some of the exciting new scientific and engineering developments, the specialized applications of which were forced ahead during the war.

The Corporation and Faculty of M.I.T. have expressed their faith in this future by approving a large and progressive program to maintain our institution in a position of leadership and serv-

ice in this new era. It is my pleasure to report to you on some of the major aspects of this program and to bespeak your wholehearted backing and help in its achievement. I think you will agree that this program opens up challenging and exciting opportunities. Let me, therefore, take up some of the more important items.

We acted promptly last fall to anticipate the temporary emergency by providing homes for married veterans returning to complete their studies. One hundred houses, small but efficient and attractive, have been erected on the tract west of Massachusetts Avenue and form a community which we call "Westgate." Although their occupancy has been unfortunately delayed by inability to secure the anticipated prompt deliveries of the kitchen units, several of the houses are complete and are now being occupied, and we expect the others to be ready very shortly. Thus, while many institutions were worrying about or planning to meet this emergency, we have actually in existence a group of emergency houses which will give very substantial relief.

Of greater ultimate importance is more adequate provision for the permanent housing of our students. Even before the war we realized the inadequacy of our dormitories. In the future the need for additional dormitories will be even greater, partly because housing accommodations in the community are far more crowded than before and partly because we are permanently increasing from 3,000 to 3,500 the number of students admitted under our stabilized enrollment plan. This increase is made possible by the additional permanent buildings erected, one in full and others in part with our own funds, during the war, and partly by the outfitting of new chemical laboratories and other readjustments within our older buildings.

... Student Housing ...

This student housing problem has been studied by the Administration, the Executive Committee, and the Corporation's Committee on Student Activity with the result that we now have authorization to erect a dormitory to house about 300 students, to be located facing the Charles River on the tract west of Massachusetts Avenue and to be operated as a "Senior House." This dormitory will be a real students' home, complete with its own dining facilities, reading and recreational rooms, a suite of rooms for a resident "master," who will presumably be some unmarried member of the Faculty, and also a suite for visiting guests. The preliminary planning of this dormitory has been placed in the hands of the distinguished Finnish architect,

Alvar Aalto, who has returned to the staff of our School of Architecture and Planning, from which he has been absent since the period of the Russo-Finnish War. We expect this Senior House to be ready for occupancy in the fall of 1947.

... Gymnasium-Auditorium Unit ...

With the loss of the old Hangar Gym, relic of World War I, which had to be torn down to make way for activities of World War II, a large gymnasium floor becomes a first priority requirement. As a result of the Alumni drive some years ago to provide student recreational facilities, we have as fine a swimming pool as there is in the world, a good track and track house, and an excellent battery of squash courts. We also have the small gymnasium on the top floor of the Walker Memorial building. However, a large well-equipped gymnasium with attendant locker and office facilities is essential to the physical well-being of our student body, especially during the long winter months.

The Executive Committee of the Corporation approves the erection of such a gymnasium unit, which will be designed in a manner for quick conversion, when desired, into an assembly hall (another one of our pressing needs). The necessary funds, although not yet in hand, are being sought with sufficient confidence so that the planning for design and construction is going ahead without delay. It is hoped that the final plans and the source of these funds may be disclosed at the time of the Alumni dinner in June.

In the meantime, Professors Anderson and Beckwith of our School of Architecture and Planning, who did such an outstanding job in designing our swimming pool and who have already done a great deal of work on the plans for a gymnasium, are designing this unit, which also will be located on the tract west of Massachusetts Avenue, since it has become evident that all remaining space in the tract east of Massachusetts Avenue should be reserved for academic buildings.

... Automotive Developments ...

The automotive field is one of rapidly expanding interest and importance, as is proven by the greatly increased demand on the part of civilian students and also postgraduate students from the armed services and by the increasing number of opportunities for employment in industry. Furthermore, the striking developments of the last few years in gas turbines give convincing proof that gas turbines will be a very important type of motive power in the future.

To enable the Institute to handle more adequately its opportunities in the automotive field, our generous colleague, Alfred P. Sloan, Jr., '95, has provided funds for an enlargement and reorganization of the Sloan Automotive Laboratory to supply new facilities for instruction and research. Mr. Sloan has also provided funds to purchase from the government, as part of a gas turbine laboratory, an excellent adjacent building erected during the war for some special research on fuels. In addition to

this gift, contributions totaling half a million dollars have been received from the General Electric Company, Westinghouse Electric Corporation, United Aircraft Corporation, Curtiss-Wright Corporation, and the General Machinery Corporation, all for the purpose of providing the additional building space and equipment for the Gas Turbine Laboratory and a small residue to support its initial operations. The equipment is now in process of procurement, and the final plans of the building will be settled as soon as a few remaining details of equipment are determined. These new facilities should be well under way by next fall.

... Hydraulics Laboratory and Towing Tank ...

In his forward-looking plans for the Institute our late President, Dr. Stratton, gave top priority to an Hydraulics Laboratory and a Naval Towing Tank, but unfortunately the depression wrecked the plans which he had laid for their procurement. The need is greater now than ever, with increased technological developments in the field of hydraulics and with the steadily increasing importance of our Department of Naval Architecture and Marine Engineering, and especially its course in naval construction and engineering for postgraduate Navy students.

To meet this need, the Executive Committee has authorized the construction of an Hydraulics Laboratory and Naval Towing Tank, which will share combined facilities and will be located at the eastern end of the long narrow tract between Vassar Street and the railroad. The design of this building is already well under way and if labor and materials are available, construction should start this summer.

The funds, supplemented by an allocation from regular Institute funds, are being provided by contributions from interested companies and individuals. Two shipbuilding companies and our loyal Alumnus and Corporation member, Thomas C. Desmond, '09, have already made generous contributions, and others are pending through the activities of the group of principal shipbuilding companies and the Visiting Committees on the Departments of Civil and Sanitary Engineering and Naval Architecture and Marine Engineering.

As you know, our Machine Tool Laboratory has been located on the third floor of Building 3. Largely through efforts of the late Professor Emeritus Robert H. Smith, it was well equipped with tools which were procured as surplus property after World War I. In the ensuing interval this equipment has become obsolete, and for a number of years our Faculty and the Visiting Committee on the Department of Mechanical Engineering have felt the increasing need of a more adequate and modern machine tool laboratory.

With the help of this Visiting Committee and other interested members of the Corporation and through the devoted and able efforts of several members of our staff assigned to this project, we are succeeding in procuring from the armed forces a very fine lot of up-to-date machine tools no longer needed for war produc-

Prominent members of the Class of 1917 include William H. McAdams, Professor of Chemical Engineering at the Institute, Commodore William A. Sullivan, U.S.N., whose engineering training was directed to raising the Normandie, and Raymond Stevens, past President of the Alumni Association.



tion. The principal credit for this procurement goes to our late colleague, John D. Mitsch, '20, Associate Professor of Structural Engineering, who lost his life in the recent tragic airplane accident while flying from New York to Boston after attending a meeting of the American Society of Civil Engineers, in connection with which organization he was also engaged in further machine tool procurement. It is an interesting fact that associated in this project with Professor Mitsch and an active Faculty committee has been Prescott A. Smith, '35, Assistant Professor of Mechanical Engineering, son of the late Professor Robert H. Smith, who assembled our machine tools after World War I.

It has been quite clear that the third floor of Building 3 is not a good location for the Machine Tool Laboratory. The space is inadequate and can be better used for other purposes, and the floor loadings are too heavy. Consequently, the Executive Committee has authorized the erection of a Machine Tool Laboratory in the space at the western end of the tract between Vassar Street and the railroad. This laboratory will occupy the present Building 35, which is devoted to foundry, forging, and welding but which will be considerably remodeled, and will include a large addition to this building to the westward. The net result will be an excellent four-story laboratory building, adequate in size and conveniently arranged to provide for the new Machine Tool Laboratory and improved quarters for the associated Metal Processing Laboratory. This construction should also get under way this summer, conditions permitting.

We are negotiating with the government for the purchase of the substantial building, just beyond Vassar Street and the railroad on Massachusetts Avenue, which was formerly owned by H. P. Hood and Sons. Acquired by the government and remodeled during the war into an excellent research laboratory, it served to house the overflow from some of the activities of the Radiation Laboratory. We plan to use this building for some of the fundamental scientific research projects being carried on for the War and Navy Departments, to which I shall refer later.

... Laboratory for Nuclear Science and Engineering ...

It is the unanimous judgment of all informed persons that the recent developments in nuclear science, which were rushed to application in the atomic bomb, present probably the most important opportunities in all history for new scientific discovery and for revolutionary scientific and engineering applications. The Institute should take its place among the leaders in research and education in developing these new fields and in training personnel to work in them. To this end, there has been established at the Institute a Laboratory of Nuclear Science and Engineering, headed by Professor J. R. Zacharias and participated in by members of the Departments of Physics, Chemistry, Biology, Chemical Engineering, Electrical Engineering, Mechanical Engineering, and Metallurgy. Fortunately, we already had on our staff a few of the most competent men in the world in special aspects of this field, and we have added a large number of the outstanding young scientists who have been employed in the various great research and development projects operated during the war under the Manhattan District of the Army Engineers. So far as scientific personnel is concerned, we should be second to none in this new field. Furthermore, we have made a very substantial start in the procurement of funds necessary to carry on this work on a quite considerable scale, even in advance of any support which may later be available through the Atomic Energy Commission, which is in process of being established by Federal legislation to support these new developments in educational and other institutions.

One essential requirement for work in this field is the provision of a large laboratory, especially designed to meet the peculiar requirements of safety and convenience in the operation of the various powerful machines which are the tools of nuclear

science. These are devices like the cyclotron, the high-voltage electrostatic generator, the betatron, the synchrotron, and the uranium pile.

To meet this need, the Executive Committee is studying means of financing the erection of a large new laboratory building to run north from the present Metallurgy Laboratory of Building 8, extending back toward Vassar Street on the location of the present temporary Radiation Laboratory Building 22, which we expect to tear down as soon as possible after July 1. It is certain that this project must be carried through, and I am decidedly hopeful that the means to do it can be found; to fail to do it would mean taking a back seat in the most potentially important new vehicle of technology. The architectural firm of Voorhees, Walker, Foley and Smith is already at work on the plans for this building.

... The Library ...

I am glad to announce publicly at this time an anonymous gift of \$1,200,000 for the erection of a new library. The firm of Voorhees, Walker, Foley and Smith, in association with Professors Anderson and Beckwith of our architectural staff, has very nearly completed the basic plans for the new library. Professor John E. Burchard, '23, Director of the M.I.T. Libraries, has co-operated with the architects in their planning. A most constructive move in this planning was the organization of an informal group of representatives of a large number of colleges and universities, all planning new library buildings, who were brought together jointly by Professor Burchard and Julian Boyd, librarian of Princeton University, to pool their ideas.

Our plans contemplate a really great library with many unique features, which will become the center of the cultural life and interests of our student body. It will be located in the open space between the main educational buildings and the Walker Memorial and connected with both. It will contain the library stacks, reading rooms, offices, and operating facilities and also, in or immediately adjacent to it, will be located the offices and seminar rooms and special library collections of the various departments which constitute our Division of Humanities. There is also planned a certain amount of exposition space to house our world-famous Dard Hunter Paper Museum and also temporary exhibitions of cultural and educational interest.

To build a really great library designed and equipped to exert a profound influence on our successive generations of students will probably require funds very substantially in excess of those which have thus far been provided. Consequently, the final authorization to proceed with these plans will have to await their final financing, which will be undertaken as soon as the architects' plans are complete and we have more definite knowledge of the requirements. We should have this information within a month or two.

Over and above these new additions to our physical plant, we have authorized and have under way a very substantial rearrangement and modernization of many parts of our present educational buildings. Under Vice-president Killian there has proceeded during the last two years a very comprehensive study of reallocation of space and attendant remodeling of laboratories, so that with this whole program of new facilities, our various departments and activities may be arranged and provided for in the manner most advantageous for their current operations and future development. These changes in our existing plant, together with modernization of equipment, are involving an expenditure upward of \$700,000. A considerable portion of these changes are incident to reconversion from wartime to peacetime use of facilities, for which the expense has been provided for in advance through our war contracts.

When this whole program of modifications and new buildings is completed, we hope within the next two years, the Institute should be magnificently set up for its future operations insofar

(Continued on page 368)

REVERE COPPER IN FEDERAL 200 KW TUBE

THE 200 KW vacuum tube made by Federal Telephone and Radio Corporation is the most powerful h-f tube yet built in this country. It has been used in OWI short-wave transmitters and has demonstrated its capabilities as to power output, and dependability.

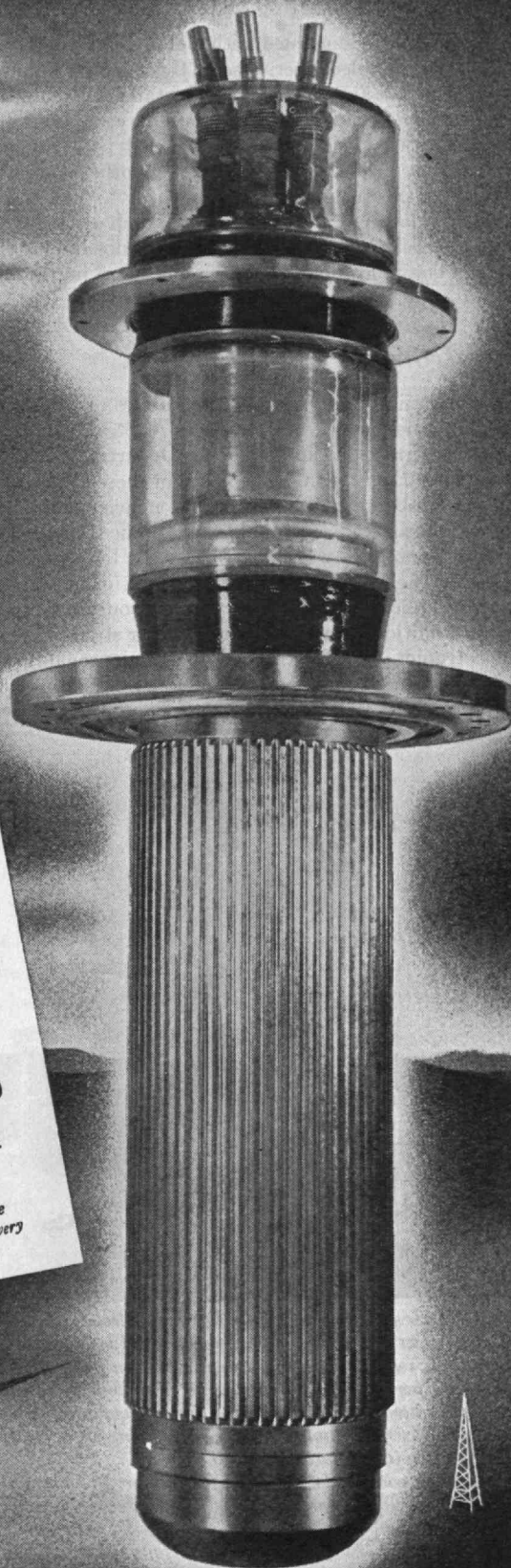
Revere OFHC (Oxygen-Free High Conductivity) Copper is one of the principal materials used in the tube. The anode is machined from a large tube of this material, which is also employed in the form of heavy sheet for making the cup that closes the anode at the bottom, in the form of strip for drawing the terminal cups. All copper used in the tube is from Revere, which thus again demonstrates its ability to meet the most rigid requirements as to electrical and thermal conductivity, workability and uniformity. For high-quality copper and brass for radio purposes, see Revere.

REVERE

COPPER AND BRASS INCORPORATED
Founded by Paul Revere in 1801

230 Park Avenue, New York 17, New York
Mills: Baltimore, Md.; Chicago, Ill.; Detroit, Mich.;
New Bedford, Mass.; Rome, N. Y.

Sales Offices in principal cities, distributors everywhere
Listen to Exploring the Unknown on the Mutual Network every
Sunday evening, 9 to 9:30 p. m., EST.



Federal 134 Transmitting Tube, 200 KW oscillator and amplifier; length, 34-1/8".

THE INSTITUTE GAZETTE

(Continued from page 366)

as its physical plant is concerned, although we can still see some gaps that should be filled later. One of these which would add greatly to the morale and efficiency of our staff is a Faculty Club building, for which preliminary plans have already been developed by a Faculty Club committee headed by William C. Greene, Associate Professor of English. Few other comparable institutions lack this facility.

There are a number of other activities which are being very substantially expanded but for which we are not building new laboratories. The following are among the more important of these activities.

. . . Electronics Laboratory . . .

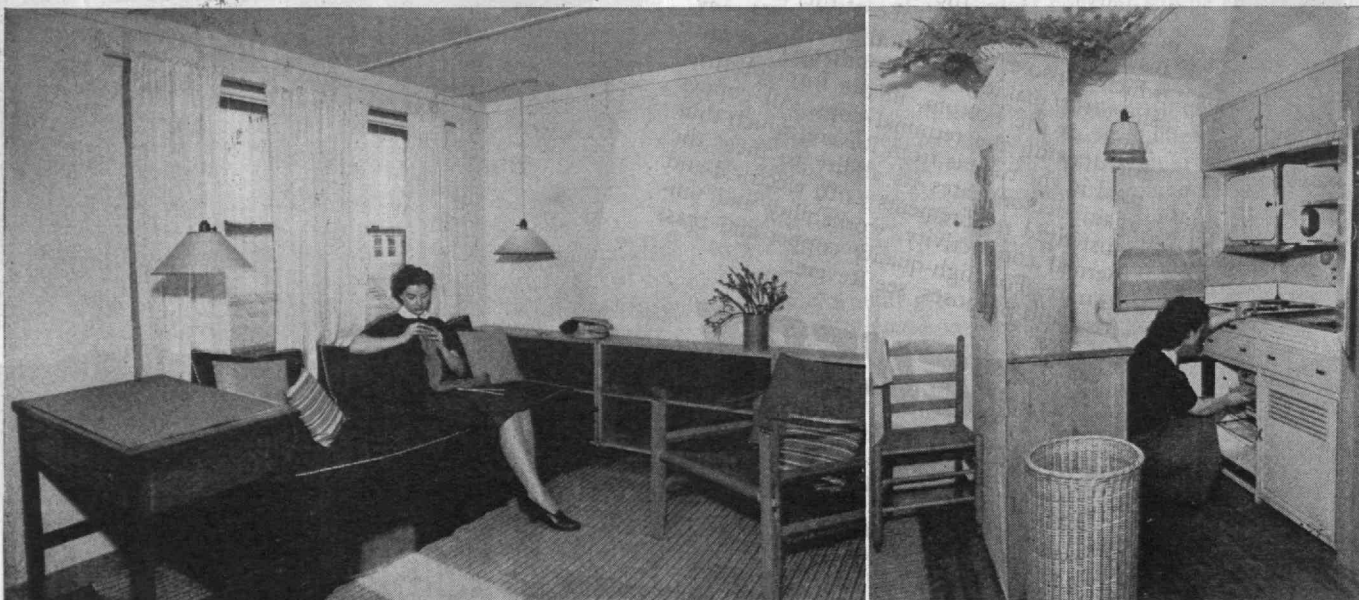
We have organized a Research Laboratory of Electronics, under the directorship of Professor Julius A. Stratton, '23, and combining the interests in this field of our Departments of Physics and Electrical Engineering. The heads of these Departments join Professor Stratton in determining the policies of this laboratory, and its facilities are available to qualified research students or staff from the two Departments, or from any other Department of the Institute having good use for them. From the Radiation Laboratory and other similar sources a number of important additions have been made to our staff and equipment in electronics, and, for the time being, reasonably good temporary laboratory facilities are available in Building 20 on

the near side of Vassar Street. This is the better one of the two large temporary buildings erected during the war to house the activities of the Radiation Laboratory. A substantial program of fundamental research in electronics is currently financed by the final residual of the Office of Scientific Research and Development war contract, supplemented by additional funds from a group of industrial and governmental agencies to be announced later, under terms which provide complete freedom in the publication of results and the carrying on of research in which the basic objective is scientific knowledge, rather than the development of special gadgets or instruments. Similarly, we are providing a laboratory and excellent facilities for research and instruction in acoustics, with industrial and governmental support to be announced later.

During the past year the Corporation authorized the creation of the Department of Food Technology, under the able leadership of its new head, Professor William L. Campbell, '15. A group of four of the leading food or allied manufacturers are sharing equally in the contribution of \$200,000 over a period of five years in support of the work of this Department. These companies are Standard Brands Inc., Nestle's Milk Products, Inc., American Can Company, and Dow Chemical Company. Two or three other companies appear likely to join in this project soon. Although the present laboratory facilities for this subject are sadly inadequate, a considerable improvement will be made in connection with the reallocation of space described above. We believe, however, that a new laboratory to house the Departments of Biology and Food Technology will be one of the principal requirements of the future.

Fundamental Research for the Army and Navy in various fields will continue to be an important activity at M.I.T., judging

(Continued on page 370)



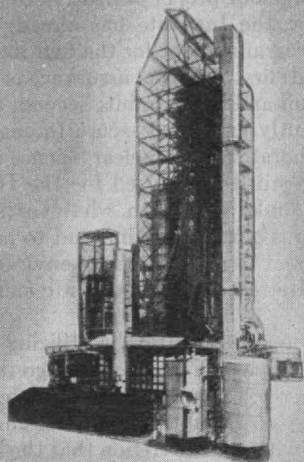
Westgate Houses Occupied. Families have already moved into some of the hundred houses of the Institute's Westgate Development, established to meet the need for housing married veteran students at M. I. T. Originally announced in *The Review* on page 45 of the November, 1945, issue, with a subsequent report on page 235 of the February, 1946, issue, the Westgate Development is planned to meet the needs of young persons of limited income. The keynote of the scheme of the furnishing and decoration, designed by Mary Bassetti, the Institute's consultant on interior design for Westgate, combines simplicity, economy, flexibility, and comfort. Miss Bassetti's services are also available to veterans' families in the purchasing of furniture and various household equipment at the lowest possible cost and in planning the interiors of the individual Westgate houses.

The houses are completely insulated for comfort in summer and winter. Double windows are provided for use during the winter. In the summer the outer windows may be replaced by screens. Heating is done by a centrally located gas-burning heating unit in each house.

Upon occupying a house, each family is provided with a complete kit of information relating to living conditions. This kit includes a floor plan of the building, a list of all equipment supplied, rules governing the use of the house, a list of the basic furniture required for simple living, and a list of additional equipment and furnishings which may be desirable but which are not absolutely necessary.

The reproductions above illustrate the living room and kitchen of one of the houses, furnished as a model for students planning equipment for their own Westgate homes. A student's study desk with ample bookcase shelving forms part of the furnishings of the living room.

The compact one-piece kitchen unit (right) installed in Westgate houses provides maximum convenience and flexibility in a minimum amount of space. The kitchen unit, only four feet wide and two feet deep, contains a four-burner gas stove with oven, an electric refrigerator, a sink, and drawers and closet space for storage. The kitchen also has its own ventilating system to carry off cooking odors.



STARTED UP

May 12, 1945

**TIDE WATER ASSOCIATED TCC UNIT WAS
SHUT DOWN FOR INSPECTION**

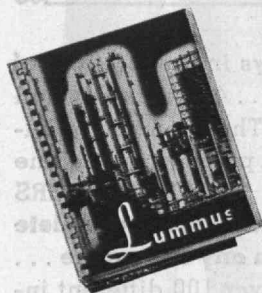
January 7, 1946

When the 10,000 barrel per day Thermoform Catalytic Cracking unit of the Tide Water Associated Oil Company, Bayonne, was shut down for inspection on January 7, it had been on stream 240 days.

Sprockets on elevator drive were reversed to balance wear. Elevator chains were shortened by removing two links. No major maintenance was necessary. Kiln linings and internals were in perfect condition. The total turnaround labor amounted to approximately 10,000 man hours.

Long initial runs are characteristic of Lummus plants. They reflect sound design, good engineering, careful construction . . . they presage the dependable operation repeatedly demonstrated in the 26 TCC units . . . 8 Polyform plants . . . 3 Houdry plants . . . 10 Alkylolation units . . . 6 Isomerization units . . . 5-100 octane plants and many other Lummus contributions to the war time expansion of the petroleum refining industry.

If you have the problem of converting existing facilities to meet competition . . . if you are planning the installation of modern plants for the economical production of high octane motor gasoline, Lummus will be glad to co-operate with you in an unbiased study of the processes best suited to meet your refining and marketing conditions. Every Lummus study includes a thorough analysis and presentation of the economics of the proposed installation.



For further information on Lummus refinery surveys and construction, write for a copy of "Petroleum Refining Processes"; containing latest data, flow diagrams, photographs.

THE LUMMUS COMPANY

420 Lexington Avenue, New York 17, N. Y.

600 South Michigan Avenue, Chicago 5, Ill.
Mellie Esperson Bldg., Houston 2, Texas

634 South Spring St., Los Angeles 14, Calif.
78 Mount Street, London, W. 1, England

Lummus
PETROLEUM REFINING PLANTS

THE INSTITUTE GAZETTE

(Continued from page 368)

by present indications. Unlike our research and development work during the war, which was carried on in secrecy and devoted to specific military objectives, the greater portion of this research in the future is to be of a much more fundamental and forward-looking nature. For peacetime we are refusing to accept any projects which cannot be justified on the basis of their contribution to our own educational program and which are not aimed at objectives in which our staff are enthusiastic because of their scientific or engineering interest. Both the Army and the Navy have been understanding of and co-operative with this point of view, and on this basis we believe that a considerable amount of important work can be carried on to mutual advantage and wholly in consistence with our responsibilities.

... Returning Veterans ...

Intimately related to many aspects of the above program is the Institute's policy to do everything in its power to provide educational opportunities for returning veterans, subject only to the condition that the quality of our educational standards shall not be impaired. As long as the veterans are with us in substantial numbers, we will increase our limit on enrollment by 50 per cent to a total of 4,500. This number is the absolute capacity of our facilities and will require a continuation of abnormally heavy teaching schedules on the part of our staff. The pressure for veteran admission is terrific, involving 4,000 letters received a week by our Admissions Office and a local staff of 55 to handle personal interviews, in addition to the heavy load

carried by our Honorary Secretaries throughout the country. The sooner we can provide the various facilities described above, the better we can discharge our proper obligation to veterans.

In one way or another, the Institute has already found it possible to finance the program except for the four items which I have already mentioned: first, the final assurance of funds required for the gymnasium-auditorium unit; second, the funds which we rather confidently expect to secure to enable us to proceed with the new Laboratory for Nuclear Science and Engineering; third, a balance still to be raised for the Hydraulics Laboratory and Towing Tank; and fourth, whatever is required in excess of the anonymous gift already in hand to permit the erection of the type of great library which we envisage. On all of these four points we are reasonably optimistic and are proceeding with the plans.

In financing this program the Institute is utilizing new gifts and the balance of the funds which many years ago were made available, largely by George Eastman, for academic building purposes and in addition is drawing heavily on its unrestricted funds. This is being done with the conviction that the best utilization of these funds is now to provide the facilities which will enable us to meet the new needs and capitalize on the new opportunities now before us as promptly and effectively as possible. This heavy draft on the Institute's unrestricted funds, however, makes replenishment of these funds a very urgent need.

We have a teaching and research staff of strength never before equalled in the history of the Institute, and these facilities will permit them, and the thousands of students who will pass through our institution in the years ahead, to have the advantage of the best opportunities within the power of this institution to provide. The program is clearly in line with the directive of the M.I.T. Charter: to maintain a school of industrial science and to advance science and its practical applications.

(Continued on page 372)



Folks Were Still Using OIL LAMPS When This WHS Unit was Created

BUT...

TODAY'S
PRODUCTS
ARE
DIFFERENT!



Always in the forefront of design ... 45 years ago and today! The modern, quiet-running, precision made line of WHS SPEED REDUCERS ... the largest complete line from any one source ... serves over 100 different industries. Our experienced engineering facilities are at your disposal. Have you our Catalog No. 145?

**"BV" Series...WHS
SPEED REDUCER**

Cutter P. Davis, M.I.T. '19, President

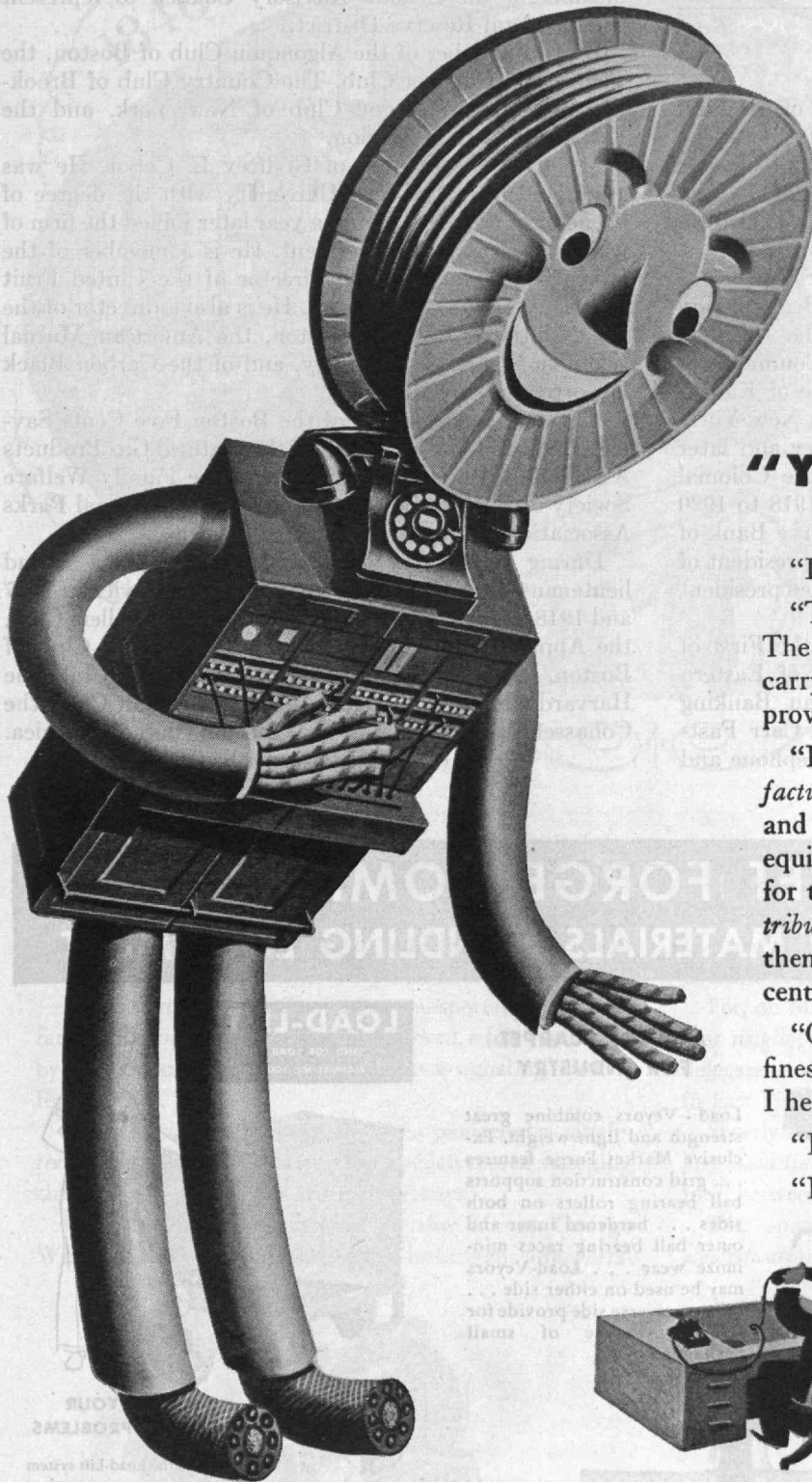
45th Anniversary
1901-1946





WINFIELD H. SMITH, Inc.

55 MAY STREET...SPRINGVILLE..ERIE COUNTY..NEW YORK



"You rang for me?"

"I have been working for you for years.

"That telephone in your hand, I made. The long thin wires, the stout cables that carry your voice at the speed of light . . . I provided them, too.

"I've been busy . . . since 1882 . . . manufacturing telephones, switchboards, cable and other Bell System apparatus and equipment. I purchase supplies of all kinds for the Bell Telephone companies . . . distribute all this material and equipment to them throughout the nation. I install central office switchboards.

"Our nation's telephone service is the finest and most economical in all the world. I help make it possible.

"Remember my name . . .

"It's Western Electric."



MANUFACTURER... PURCHASER...

of 43,000 varieties of telephone apparatus.

of supplies of all kinds for telephone companies.

DISTRIBUTOR...

of telephone apparatus and supplies.

INSTALLER...

of telephone central office equipment.

FOR THE BELL



SYSTEM



Western Electric

THE INSTITUTE GAZETTE

(Continued from page 370)

Elected

CHARLES E. SPENCER, JR., President of the First National Bank of Boston, has been elected a life member of the Corporation of the Institute, and Thomas D. Cabot, Vice-president and general manager of Godfrey L. Cabot, Inc., Boston, has been elected a special term member of the Institute's governing body for five years.

A native of New Brunswick, N. J., Mr. Spencer was educated at Rutgers Preparatory School. Beginning in 1900 he was successively associated with the National Bank of New Jersey, the National Bank of Commerce in New York, the National Bank of Commerce of Kansas City, and the Trust Company of America in New York. In 1907 he was appointed assistant treasurer and later was advanced to the post of treasurer of the Colonial Trust Company of Waterbury, Conn. From 1918 to 1920 he was deputy governor of the Federal Reserve Bank of Boston, leaving that position to become vice-president of the First National Bank, of which he was elected president in 1938.

Mr. Spencer is president and director of the First of Boston International Corporation, director of Eastern Malleable Iron Company, French American Banking Corporation, Arthur D. Little, Inc., United-Carr Fastener Corporation, and the New England Telephone and

Telegraph Company; trustee of the American Optical Company, trustee and director of the Massachusetts Society for the Prevention of Cruelty to Animals; and member of the Federal Advisory Council to represent First Federal Reserve District.

He is a member of the Algonquin Club of Boston, the Tennis and Racquet Club, The Country Club of Brookline, the Union League Club of New York, and the Kittansett Club of Marion.

Mr. Cabot is the son of Godfrey L. Cabot. He was graduated from Harvard University with the degree of bachelor of arts in 1919 and a year later joined the firm of which he is now vice-president. He is a member of the Executive Committee and director of the United Fruit Company and its subsidiaries. He is also a director of the First National Bank of Boston, the American Mutual Liability Insurance Company, and of the Carbon Black Export Company, Inc.

Mr. Cabot is a trustee of the Boston Five Cents Savings Bank and vice-president of the Natural Gas Products Association. He is also a director of the Family Welfare Society of Boston, Boys' Camp, Inc., the National Parks Association, and many other organizations.

During World War I Mr. Cabot served as a second lieutenant in the United States Army Air Service in 1917 and 1918. He is a member of the Harvard Travellers Club, the Appalachian Mountain Club, the Harvard Club of Boston, the Union Club, the American Alpine Club, the Harvard Club of New York, the Western Golf Club, the Cohasset Yacht Club, and the Cruising Club of America.

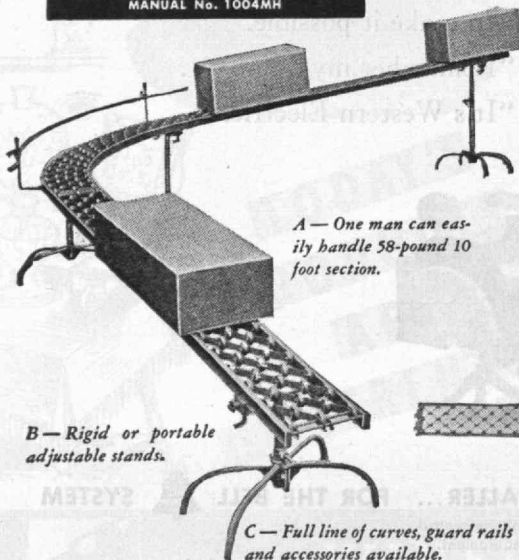
(Continued on page 374)



MARKET FORGE COMPANY STANDARDIZED MATERIALS HANDLING EQUIPMENT

LOAD-VEYORS

SEND FOR LOAD-VEYOR
MANUAL No. 1004MH



A MAGIC CARPET FOR INDUSTRY

Load-Veyors combine great strength and light weight. Exclusive Market Forge features . . . grid construction supports ball bearing rollers on both sides . . . hardened inner and outer ball bearing races minimize wear . . . Load-Veyors may be used on either side . . . rails on reverse side provide for safe conveyance of small packages.



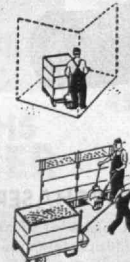
LOAD-LIFTS

SEND FOR LOAD-LIFT
MANUAL No. 1005MH



SIMPLIFY YOUR HANDLING PROBLEMS

The use of the Load-Lift system will greatly increase your plant efficiency for the smallest capital investment of any adequate materials handling system. Saves double handling — utilizes space advantageously — reduces fatigue — eliminates damage from elements.



George C. Glover '99 Nathaniel Warshaw '16 Leo M. Beckwith '35

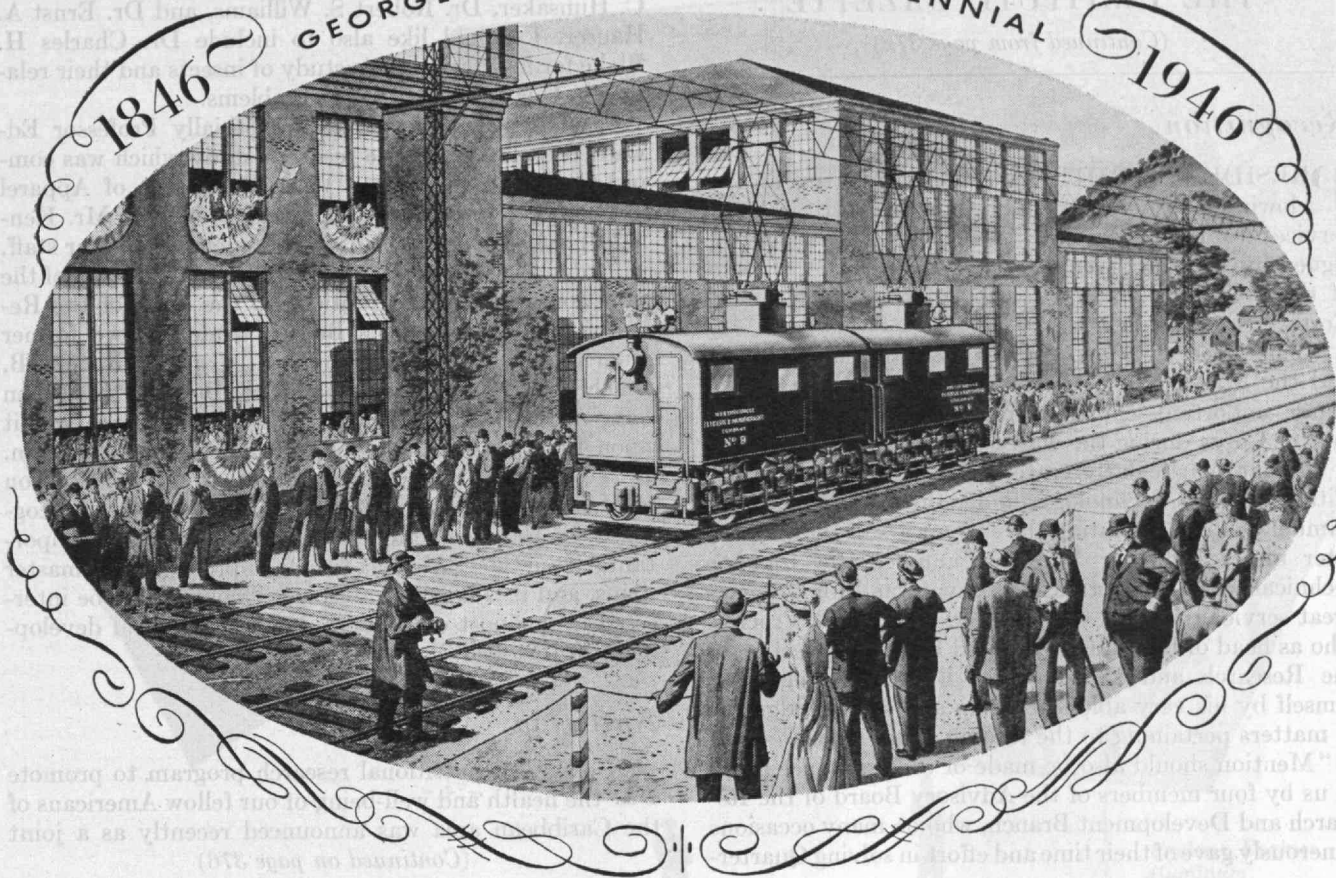
Write for name of nearest Industrial Distributor who stocks this equipment

MARKET FORGE COMPANY MATERIALS HANDLING DIVISION 99 GARVEY ST., EVERETT 49, MASS.

GEORGE WESTINGHOUSE CENTENNIAL

1846

1946



Transportation pioneer

The two dominating spheres of achievement of George Westinghouse were *transportation* and *alternating current*.

His first major contribution to transportation was the famous Westinghouse air brake—followed, a few years later, by his development of automatic block-signaling systems for railroads.

Later, this great inventor-engineer pioneered a single-reduction-gear direct current motor which caused sweeping changes in the operation of street railways.

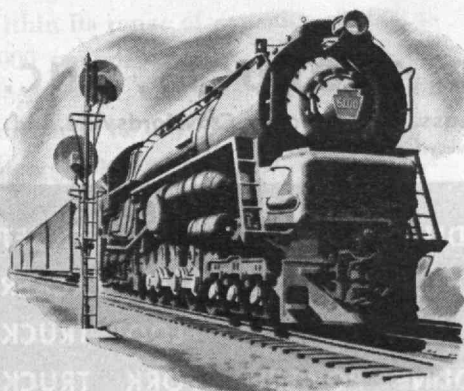
But a unique achievement in the life of George Westinghouse came in 1905 — when he brought *transporta-*

tion and *alternating current* together in a single, masterful triumph of engineering.

For, on May 16, 1905, he successfully demonstrated the first *single-phase main-line* electric locomotive before the delegates to the International Railway Congress, at his plant in East Pittsburgh, Pa.

Shortly afterwards, in 1907, Westinghouse electrified the first *main-line railroad*... the New York, New Haven & Hartford, between Woodlawn, New York, and Stamford, Conn.

This spectacular accomplishment heralded the major electrification of railroads the world over.



Westinghouse

PLANTS IN 25 CITIES OFFICES EVERYWHERE

TODAY... A new and revolutionary type of locomotive is hauling heavy trains over the Pennsylvania Railroad Lines. It is powered by a Westinghouse geared steam turbine... the smoothest, most compact, most efficient source of steam power ever devised by man. In addition to many products used by railroads, the Westinghouse Electric Corporation also builds electric mine locomotives and other types for industrial use.

THE INSTITUTE GAZETTE

(Continued from page 372)

Recognition

PRESIDENT COMPTON recently received the following letter of appreciation for the Institute's war services to the Quartermaster Corps. The letter was signed by Brigadier General Georges F. Doriot, director of the military planning division of the Quartermaster Corps.

"This office wishes to express its appreciation to you and the Massachusetts Institute of Technology for the many important contributions afforded the Quartermaster Corps during the war years.

"We are particularly grateful for the work of the Institute of Food Technology, under the leadership of Dr. Samuel C. Prescott during the early years of the war and later under Professor William Campbell; for the fine technical work of Captain E. Kenyon; and for the very great service rendered to us by Dr. Bernard E. Proctor, who as head of the Subsistence and Packaging Section of the Research and Development Branch distinguished himself by his very able leadership and sound judgment in matters pertaining to the feeding of the Army.

"Mention should also be made of the assistance given to us by four members of the Advisory Board of the Research and Development Branch, who on many occasions generously gave of their time and effort in solving Quarter-

master Corps problems; Mr. Bradley Dewey, Dr. Jerome C. Hunsaker, Dr. Robert S. Williams, and Dr. Ernst A. Hauser. I should like also to include Dr. Charles H. Blake for his very capable study of insects and their relation to Quartermaster Corps problems.

"I should like to commend especially Professor Edward R. Schwarz for the research study which was completed for our office on "Wear Resistance of Apparel Textiles." In doing so I should like to include Mr. Kenneth Fox, who until recently was a member of your staff.

"I desire also to take this opportunity to tell you of the very considerable contributions to the work of the Research and Development Branch made by two former students in the Textile Division: Captain Rogers B. Finch and Captain Stanley Backer. Both of these men have established records with us which reflect great credit upon themselves personally and upon your institution.

"I personally want you to know that the contribution of M.I.T. to our work will long be remembered and recognized by the Quartermaster Corps as playing an important part in the total effort to help improve Quartermaster items, and it is hoped that you will continue to be interested in our post-war program of research and development in this field."

Nutrition

AN extended nutritional research program to promote the health and well-being of our fellow Americans of the Caribbean area was announced recently as a joint

(Continued on page 376)

LEWIS-SHEPARD

FOR OVER 30 YEARS DESIGNING, ENGINEERING and MANUFACTURING
MATERIALS HANDLING EQUIPMENT



The L-S list of products is extensive,—a complete line on wheels Engineering experience and personnel of the highest calibre,—manufacturing facilities both ample and modern in every respect,—service of a kind which has made Lewis-Shepard a buy-word at many plants throughout the highly industrialized U.S.A.,—and across the water, too!

LEWIS-SHEPARD PRODUCTS, INC.

251 Walnut Street, Watertown, Mass. • Branch: Crawfordsville, Ind.

Sales Representatives in Principal Cities



SINGLELIFTS

HYDRAULIC HANDLIFT TRUCKS

JACKLIFTS

SKIDS

PALLETS

PALLET TRUCKS

PALLET STACKERS

PRODUCTION LIFTERS

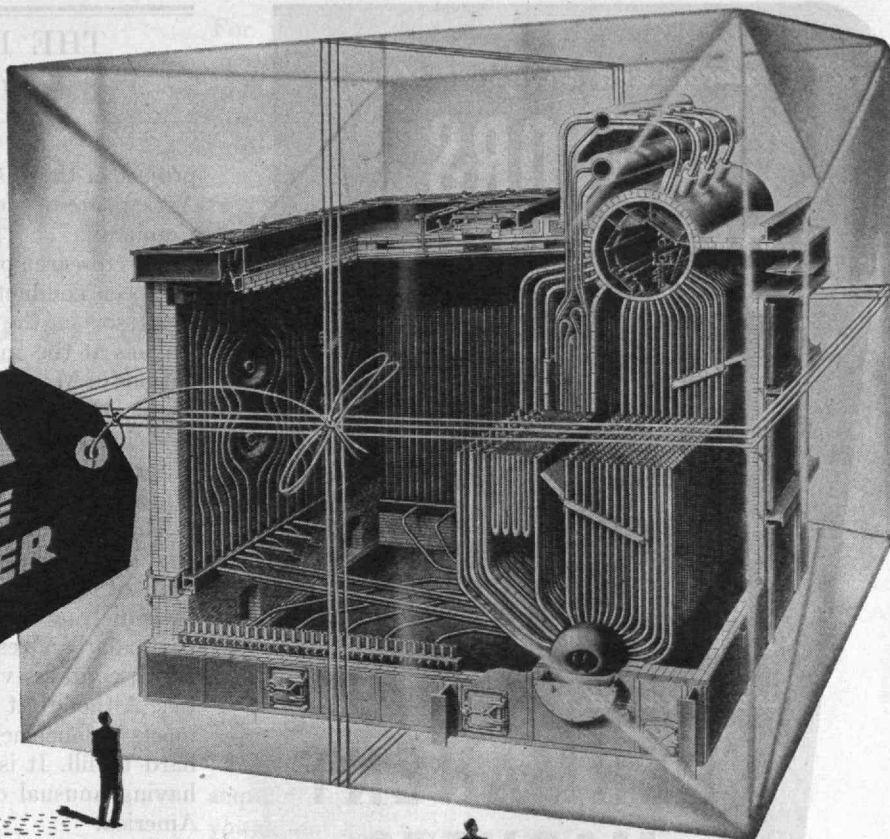
CRANES

RACKS

FLOOR TRUCKS

ELECTRIC, GAS-ELECTRIC AND GASOLINE POWERED FORK TRUCKS

**300 TON
PACKAGE
OF POWER**



THAT SERVES ALL INDUSTRY

For your plant it might be less than 200 tons or more than 500, but it would look just about the same as the picture, for this is a thoroughly standardized steam generating unit which combines in one "package" design all the components required for the efficient generation of steam from any fuel.

Within its range of capacity—30,000 to 300,000 pounds of steam per hour—this modern boiler unit is applicable to the steam needs of any industrial plant, regardless of fuel to be used or location. For evidence of this, glance through the accompanying list of industries served and consider the fact that these installa-

tions are located throughout the U.S.A., as well as in Canada, Mexico, Central America, South America, Europe and Asia. Consider further that this record of industry-wide and world-wide acceptance has been achieved within the past decade.

All of which constitutes good reason for you to ask your engineers or consultants to investigate Combustion Engineering's Type VU Steam Generator when you are next in the market for boiler equipment. This action on your part will be a logical first step toward assuring your plant of an adequate and dependable supply of steam at minimum cost.



A940

COMBUSTION ENGINEERING

200 Madison Avenue, New York 16, N. Y.

Airplane Engines
Aluminum
Asphalt
Automobiles
Bleacheries
Breweries
Building Materials
Chemicals
Cement
Cellophane
Carpet
Coke
Confectionery
Distilling
Dairy Products
Department Stores
Explosives
Electrical Equipment
Food Products
Foundries
Gas Works
Hotels
Leather
Linoleum
Municipal
Metal Mfg.
Machinery
Meat Packing
Mining
Oil Refining
Paper
Public Utilities
Railways
Rubber
Radio
Sugar
Steel
Shoes
Shipbuilding
Textile
Tobacco
U. S. Navy Dept.
U. S. War Dept.
Universities

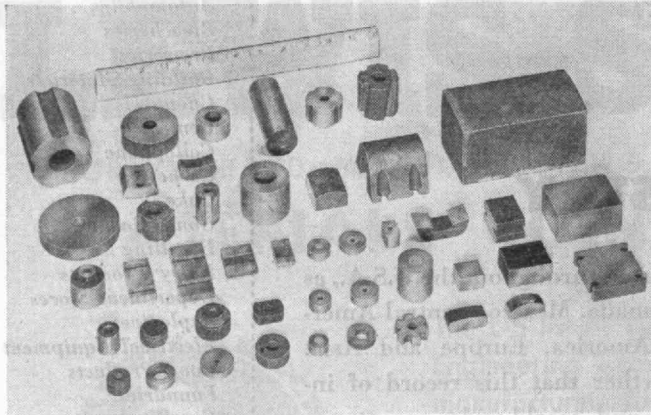
C-E installations span the entire range of steam generating requirements from small stoker-fired boilers of less than 50 horsepower to the largest power station units.

All Engineers and Designers of

MOTORS GENERATORS MAGNETOS REMOTE INDICATORS

should consider

PERMANENT MAGNETS



These Permanent Magnets are representative of some that have been designed for Motors, Generators, and allied equipment. If you have not used Permanent Magnets for these applications, consult us for engineering advice.

Write for Technical Bulletin—"Permanent Magnets for Industry," containing valuable data on design, production characteristics and applications of Permanent Magnets.

THE ARNOLD ENGINEERING COMPANY

Subsidiary of Allegheny Ludlum Steel Corporation

147 E. ONTARIO STREET, CHICAGO 11, ILLINOIS



Specialists in the Manufacture of
ALNICO PERMANENT MAGNETS

THE INSTITUTE GAZETTE

(Continued from page 374)

project of the Institute and the Pan American School of Agriculture of Honduras, sponsored by the United Fruit Company.

This research project is an outgrowth of the work which has been conducted by Robert S. Harris, '28, Associate Professor in the Department of Biology, and his colleagues at the Institute, who have made similar investigations in Mexico during the past few years. In the course of the studies in Mexico it was found that the diet is not as deficient as previously supposed but, in fact, is superior in certain respects to the diet in many parts of the United States.

The announcement pointed out that by a process of trial and error over the centuries, the aboriginal inhabitants of the Mexican highlands have learned to utilize in their diet native plants of unusual value. Dr. Harris has particularly stressed one wild plant, known as malva, which contains vitamins in unusual variety and quantities. Although it is not a particularly tasty herb, malva meets a deficiency in the diet which would otherwise be hard to fill. It is hoped and expected that other plants having unusual dietetic value may be found in Middle America.

In the investigation now beginning, specimens of all edible plants in Middle America with complete notes on their characteristics, distribution, and uses will be sent to the Institute laboratories where nutritional biochemists will analyze them. This painstaking work, which will take several years to produce practical results, is the kind of basic research necessary for the nutrition and health program of every nation. This is a pioneering program, for the Middle American area possesses many food plants not known elsewhere and which have not been analyzed before.

The Pan American School of Agriculture, which will collaborate with the Institute in this nutrition program, is directed by Wilson Popenoe, an authority on tropical agriculture. Founded and endowed with permanent maintenance in 1941 by the United Fruit Company as an outgrowth of its lively interest in experimental crops, the school gives free tuition, board, and other benefits to students from all parts of Middle America, who are taught to carry on research in every aspect of theoretical and practical agriculture and forestry.

Appointed

DISTINGUISHED for his work in the inorganic and physical chemistry of the isolation and identification of radioactive atoms, Charles D. Coryell has been appointed professor of chemistry at the Institute, according to a recent announcement by President Compton.

Dr. Coryell was a professor on the staff of the University of California at Los Angeles when he was granted a leave of absence in 1942 to lead a research staff working on the radiochemistry of the fission products in the chemistry division of the Metallurgical Laboratories at the University of Chicago. In 1943 he transferred to the newly opened Clinton Laboratories at Oak Ridge, Tenn., where

(Continued on page 378)

Announcing the IRC INDUSTRIAL SERVICE PLAN now offered by over 300 IRC Distributors !

For your resistors for experimental work, pre-production models, pilot runs, and small production runs call upon your local IRC Distributor for prompt, intelligent service!

IRC Distributors from coast to coast are now able to give industrial users of resistors a new, extra service on all standard IRC products.

Under the new IRC Industrial Service Plan, your local IRC Distributor is building and maintaining adequate stocks of standard IRC units for many industrial requirements . . . and he can now fill your moderate-quantity orders, from stock, at direct-factory prices!

Take advantage of this new IRC plan, speed your reconversion and development by getting acquainted with your local IRC Distributor. If you do not have his name, your IRC Representative will be glad to recommend one or several in your vicinity, or write direct.

IRC Catalog No. 50 lists standard products stocked by IRC Distributors.

Send for your copy.

FOR BETTER-THAN-STANDARD QUALITY

Standardize on



BT-2
(2 watts)

BTA
(1 watt)

BW-2
(2 watts)

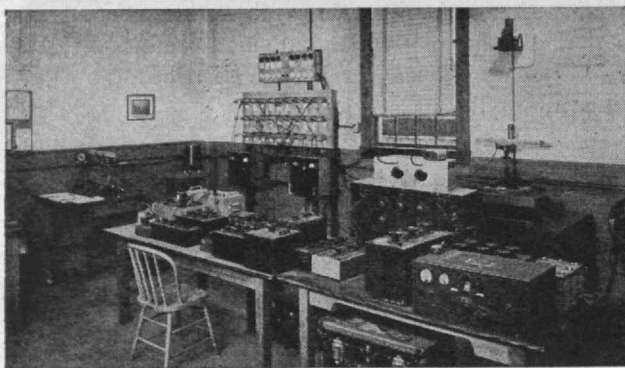
BW-1
(1 watt)

BTS
(1/2 watt)

BW-1/2
(1/2 watt)

INTERNATIONAL RESISTANCE COMPANY

DEPT. 11-D, 401 NORTH BROAD STREET, PHILADELPHIA 8, PA.



This is one of many testing rooms used in our never-ending efforts to improve the quality of Simplex products for you.

SIMPLEX WIRE & CABLE CO.

79 SIDNEY STREET
CAMBRIDGE 39, MASS.



Reg. U. S. Pat. Off.

Samson Cordage Works

Boston 10, Mass.

Manufacturers of braided cords of all kinds, including sash cord, clothes line, trolley cord, signal cord, shade cord, Venetian blind cord, awning line, etc., also polished cotton twines and specialties.

SPOT CORD

Reg. U. S. Pat. Off.



Our extra quality sash cord, distinguished at a glance by our trade-mark, the colored spots. Especially well known as the most durable material for hanging windows, for which use it has been specified by architects for more than half a century.

THE INSTITUTE GAZETTE

(Continued from page 376)

he was chief of a research section on radiochemistry and fission products at the first industrial atomic power and plutonium production plant. This work involved intensive research in inorganic, physical, and analytical chemistry, especially that part known as radiochemistry, together with development work on high-activity radiochemical separations and remote control operations. He is now working on the final reports for the project and will join the staff of the Department of Chemistry at the Institute in July.

Born in Los Angeles in 1912, Dr. Coryell is the son of Mr. and Mrs. William H. Coryell. He was educated in the public schools of Los Angeles and Wilmar, where his parents now live, and at the Alhambra High School at Alhambra, Calif. He was a scholarship student at the California Institute of Technology from 1929 to 1932, when he received the degree of bachelor of science in chemistry in three years and was awarded the California Institute of Technology Junior Travel Prize. After a year of graduate study at that institution, he combined the travel prize and the American-German Exchange Fellowship from the Institute of International Education to travel in western Europe. He enrolled for a year at the Technische Hochschule in Munich, where he carried on special investigations relating to the fluorescence of acetone.

Upon his return from Europe, Dr. Coryell carried on graduate work at the California Institute of Technology and was one of the last graduate students of the late Professor A. A. Noyes, '86, at one time acting president of M.I.T. After receiving the degree of doctor of philosophy in physical-inorganic chemistry in 1935, he worked for three years as a research fellow under Professor Linus Pauling, concentrating on the magnetic properties and structural chemistry of hemoglobin and its derivatives with the support of the Rockefeller Foundation. Transferring to the University of California at Los Angeles as an instructor in 1938, Dr. Coryell continued his work on magnetochemistry and structural problems of biologically important substances.

Dr. Coryell's teaching experience has included part-time instructorship at Deep Springs, an experimental private junior college in the California desert, and instructorship in introductory chemistry, quantitative analysis, and physical chemistry at the University of California at Los Angeles. He also gave graduate courses in chemical thermodynamics and the nature of the chemical bond. He was made an assistant professor in 1940 and an associate professor in 1944.

Dr. Coryell is a member of the American Physical Society, the American Chemical Society, the American Association for the Advancement of Science, Tau Beta Pi, and Sigma Xi and is an honorary member of Phi Lambda Upsilon. He has been active in the affairs of the Atomic Scientists and is a charter member of the Association of Oak Ridge Scientists, and a member of the Federation of American Scientists.

In 1937 Dr. Coryell married Miss Grace Mary Seeley of Colorado Springs, Colo. They have one small daughter.

(Continued on page 380)



THE NC-46

The new National NC-46 Receiver is a fine performer at a moderate price. Ten tubes in an advanced superheterodyne circuit provide excellent sensitivity throughout the receiver's range from 550 KC to 30 MC. Circuit features include an amplified and delayed AVC, series valve noise limiter with automatic threshold control, CW oscillator and separate RF and AF gain controls. The push-pull output provides 3 watts power, and the AC-DC power supply is self-contained.



NATIONAL COMPANY, INC., MALDEN, MASS.

JOHNNY MAKES GOOD GEARS . . .

From planes and tanks and ships of war—Johnny Gear has turned his skills toward the peacetime jobs he likes best to do—the special gears for intricate pieces of machinery—for power controls—for great mills—and little shops.

Wherever there's need for a precision cut gear—of almost any type and of any material—call on Diefendorf—where Johnny Gear makes good gears.

Diefendorf Gear Corp.

D. W. Diefendorf '30, President
Syracuse 1, New York



diefendorf
★★★★★ **GEARS**

HEVI DUTY

Hevi Duty Electric Co.

Electric Furnaces

MILWAUKEE, WISCONSIN

Hevi Duty Precision Electric Heat Treating Furnaces are built in a large variety of types and sizes — for many heat treating operations — with temperature ranges to 2500° F. (1371° C.). They are standard production equipment in many national industrial plants.

Write for descriptive bulletins

HAROLD E. KOCH '22, President

GEORGE A. CHUTTER '21, Vice President

ELTON E. STAPLES '26, District Manager, Cleveland

BRUNO H. WERRA '32, Director of Research

THE INSTITUTE GAZETTE

(Continued from page 378)

Visiting Committee Report

THE Committee on Student Activity* met recently with members of the Institute's Administration, Faculty, and undergraduate body to review plans under preparation and to receive suggestions pertaining to changes in facilities relating to student activities.

The members of the Committee are impressed with the excellence of the plans which have been made and with the wholesome attitude of the Administration toward the problems of student life, and they have submitted for consideration the following points of information and recommendation, certain of which are preliminary, pending the receipt of further information. Most of the proposals have already originated with the Administration and are included here by way of endorsement.

1. Last year the Committee under the chairmanship of E. C. Hadley, '14, recommended that suitable space be provided for students to entertain guests, and Pritchett Hall in Walker Memorial was suggested for this purpose. Because of war conditions, however, it was impractical to proceed with this recommendation.

It is the feeling of the present Committee that this recommendation is sound, and in order to insure that it conforms with present-day plans and conditions the Administration has been requested to submit, through the Walker Memorial committee and the Department of Architecture, recommendations on desirable changes in the Walker Memorial Building to increase its usefulness as a student recreation center.

2. Based upon information received, it is the opinion of the Committee that the interests coming within the scope of the Committee's activity would be well served if the area of the Institute property west of Massachusetts Avenue could be reserved for future expansion of student and Faculty housing and recreational facilities.

3. It would be beneficial to the interests of student activities if one of the plans already drawn by the Administration, or a modification thereof, be adopted as a "goal plan" to be used as a guide to all future expansion of the facilities of the Institute. This plan might designate

* Members of the Committee for 1945-1946 are Donald F. Carpenter, '22, chairman, Raymond Stevens, '17, and J. Willard Hayden.

(Concluded on page 382)

J. C. CORRIGAN CO.

Conveyers

Engineers • Manufacturers • Erectors
Coal Handling Systems
Materials Handling Equipment

Distributors for

Jeffrey Manufacturing Co.
Jeffrey Parts Carried in Boston Stock

41 Norwood Street, Boston, Mass.

Tel. GENeva 0800

Possessing the tools, the experience and the knowledge that we now have, we should be unfaithful servants indeed, if upon the coming of peace, we merely buried the talents charged to our keeping.

—Dr. Charles M. A. Stine

To indicate concretely what research at Arthur D. Little, Inc., means, we have prepared an illustrated brochure which may be obtained for the asking.

Arthur D. Little, Inc.

Chemists—Engineers

30 Memorial Drive

Cambridge 42, Massachusetts

WANTED FOR BOSTON

Permanent Position

Exceptional opportunity in very large, old, established national corporation with headquarters in Boston, for young man (28-35).

The man required must possess determination, ingenuity, imagination and the ability to work harmoniously with others. He must have a sound fundamental knowledge of accountancy and be familiar with I.B.M. or similar electrical accounting equipment.

The job is one of research and experiment with the objective of a major revision of the company's accounting, statistical and billing methods.

State full facts about yourself in a letter, giving age, education, experience, and any other information to support your opinion that you can meet the qualifications required. Also please state approximate salary you would accept. Address Box K, The Technology Review, M.I.T., Cambridge 39, Mass.

The RUMFORD PRESS

CONCORD
NEW HAMPSHIRE



WHERE
Printing
IS STILL A CRAFT

THE INSTITUTE GAZETTE

(Concluded from page 380)

the presently foreseeable use of the entire area of the Institute property, including such property as the Institute may acquire in the future.

4. In the preparation of the goal plan the suggestion of depressing Massachusetts Avenue to provide a convenient overpass connecting the Institute properties on both sides of the avenue has interesting possibilities.

5. The Committee has been informed that the Executive Committee has decided to erect a new dormitory to house from 200 to 300 students. It is recommended that this dormitory be situated west of Massachusetts Avenue in conformity with the second recommendation above.

6. It is recommended that this new senior dormitory provide double rooms and have its own dining service and lounge rooms.

7. It is recommended that provision be made in this dormitory for a house master, who should be single.

8. The Committee recognizes an urgent need for better recreational athletic facilities and has requested the Administration, through the Advisory Council on Athletics and the Department of Architecture, to submit recommendations on desirable changes in and additions to the athletic recreational facilities.

In making these recommendations the following principles are to be given serious consideration: (a) Since a majority of the time in the academic year falls in the cold season, primary attention should be given to indoor sports and outdoor winter sports; (b) sports which have a value to the student after graduation should be favored; and (c) the principle of maximum student participation should take precedence over the desire to provide winning teams.

9. In the development of the area west of Massachusetts Avenue it is recommended that the buildings, their arrangement, and the landscape architecture should be such as to provide the maximum in campus atmosphere.

10. All facilities should be in keeping with the high standards of the architecture and construction of the present buildings.

THE STORY OF RADAR

(Concluded from page 358)

waves in time to be of value during the war. For a number of years before our entry into the war, the Japanese had tubes capable of producing very short waves (about five inches in length) at low power, but these were not developed or applied in time to be of use in their conduct of the war. By the end of the war many United States airplanes had radar equipment, and the Navy's ships had from one to 20 sets apiece, depending upon the size of the ship and its function.

All these developments and many more came about through the enterprise of research scientists and engineers working in co-operation with the Army, the Navy, and manufacturers in this country. Too high praise cannot be given to the thousands of loyal men and women who worked without thought of personal credit to help win the war. I hope you will be proud of the part M.I.T. played in this great enterprise.

Combat boots?



"No!" you say, grimly, "that youngster I've just tucked in must never have to fight a war as I did!"

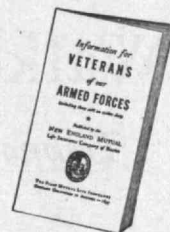
To which we reply, "Double check!"

But your boy *will* have to fight the ordinary battles of life. Maybe some extraordinary ones, depending on how your luck runs, and you will certainly want to keep your National Service Life Insurance for his future protection.

Are you completely familiar with

the conversion privileges and the optional methods of payment to your beneficiaries which your Government insurance offers? If not, you can get a quick, simple explanation of all these provisions from the local New England Mutual Career Underwriter. He's clarifying them for veterans every day—and the fact that he doesn't make a dime on National Service Life doesn't matter. See him — he'll be of real help to you.

**ANY
OTHER
QUESTIONS?**



Is there other information you want about the G. I. Bill of Rights, pensions, hospitalization, vocational training? This free booklet gives the facts in brief, understandable language. It has been sent to service men all over the world — and has brought us thousands of letters of thanks. We mail it post-paid to any veteran — just write for your copy to 501 Boylston Street, Boston 17, Mass.

New England Mutual Life Insurance Company of Boston



George Willard Smith, President Agencies in Principal Cities Coast to Coast
The First Mutual Life Insurance Company Chartered in America—1835

These Massachusetts Institute of Technology—and hundreds of other college men, represent New England Mutual:

Raymond P. Miller, '18.....Salem

Arthur C. Kenison, '19.....Boston

Blaylock Atherton, '24.....Nashua

WE HAVE OPPORTUNITIES FOR MORE MASSACHUSETTS INSTITUTE OF TECHNOLOGY MEN. WHY NOT WRITE DEPT. X-8 IN BOSTON?

WANTED

Industrial Sales Manager

NATIONALLY known manufacturer of automotive and industrial tools and equipment needs top-flight Industrial Sales Manager. Must be graduate engineer with a proven record of sales and customer service. Liberal salary. *Please write to:*

Box H
THE TECHNOLOGY REVIEW
M.I.T.
Cambridge 39, Mass.

TECHNOLOGY MEN . . .

Walker Memorial *Technology's Social Center*

is the

HOME FOR YOUR
CLASS FUNCTIONS

20

MENUS SUBMITTED ON REQUEST

20

Address: A. W. BRIDGES

WALKER MEMORIAL DINING SERVICE

M. I. T.

Cambridge 39, Massachusetts

THE TREND OF AFFAIRS

(Concluded from page 346)

continental countries, and diphtheria, which currently shows an abnormally high incidence on the continent, especially in Germany.

Thus, even though active war is over, diseases that are an aftermath of war continue to cause suffering and needless loss of life in Europe. But there is assurance that this tragedy will continue to be localized in the war-torn areas, for according to a recent statement of the Health Division of the United Nations Relief and Rehabilitation Administration, no communicable disease in Europe "is sufficiently prevalent as to constitute a menace to international health."

ENSIGNS IN THE MAKING

(Continued from page 359)

some of the routine of the Navy. You are somewhat familiar with its organization, its system of operation, its history and customs, its vocabulary, and its means of communication. This acquaintance will be a definite asset to the Navy and to you in the immediate future. Training together as a unit in uniform and submitting to the same authority has had another collateral effect. You know how important it is to play with the team and not alone. You know how important it is to obey. You have learned what it is like to be subject to the same regulations and to enjoy the same privileges as your shipmates. One of the chief assets was the democratic nature of your existence. Here it was not a case of what a man had, but what he was.

The sense of urgency and responsibility which your officers have tried to inculcate in you has had the effect, we hope, of making it easy for you to put forth your most serious efforts in your studies. The Navy, in this sense, focused the drive generated by the war itself on your more immediate problem — the completion of your education in the shortest possible time. We may also assume that the pressures placed upon you by the Navy were valuable additions to the means the college had for stimulating you to work to the limit of capacity.

How can you settle the debt? The course is clear. You leave this hall as commissioned officers in the Naval Reserve. After further indoctrination at Newport, R. I., followed by your four months' training cruise in the

(Concluded on page 386)

Can you use

INTELLIGENT
SALES ENGINEERING
IN THE ROCKY MOUNTAIN AREA?

Contact:

MATERIALS & EQUIPMENT COMPANY
EMPIRE BUILDING • DENVER 2, COLORADO

— STANLEY S. RUDNICK '32

LOOK for the Stackpole Minute Man... your guarantee of expertly engineered molded materials.

Specialists for over a third of a century in MOLDED CARBON, GRAPHITE, METAL POWDERS, and MOLDED COMPOSITION MATERIALS.
STACKPOLE CARBON CO., ST. MARYS, PA.

STACKPOLE

BRUSHES AND CONTACTS

(All carbon, graphite, metal, precious metal, and composition types)

SINTERED ALNICO II

COIL FORMS

WELDING CARBONS

CARBON DISCS

ELECTROLYTIC ANODES

PUMP and FLUID DRIVE SEALS

CARBON PIPE

CHEMICAL CARBONS

FLASHLIGHT BATTERY CARBONS

FIXED & VARIABLE RESISTORS, etc., etc.

IRON CORES

BRAZING TIPS

CARBON RHEOSTAT PILES

POWER TUBE ANODES

Data on any type on request

PALM BEACH SUITS

Palm Beach Suits are cool — that's because the cloth is blended of cool, smooth fibres into a super-porous weave with 1600 "open windows" that stay open even after repeated launderings and cleanings.

\$19.50

Palm Beach Slacks • \$6.95

Palm Beach Odd Trousers • \$5.95

Tuxedo Coat and Trousers • \$21.50

Springweave Tropicals • \$29.75

HASPEL

Seersucker Suits and Cords • \$14.50

The COOP

Harvard Square Store

ENSIGNS IN THE MAKING

(Concluded from page 384)

Atlantic, you will go aboard ships of our fleets. You go not to defeat the enemy or to fight the war. The incentive of the war itself is denied you, and yet your job certainly will not be without importance or meaning, for you are in a position to help bridge a difficult period between war and a secure peace. You will be faced with problems of morale such as always exist in the transition from one period to another.

In addition to your primary duties, you must create incentives and cultivate enthusiasm, for it will be up to you, now in new positions of authority, to keep the men under you both happy and enthusiastic about what they are doing. I know you will do your best. Do your duty to your country, be as good officers as you can, take your places of responsibility in the Navy for as long as you are needed. Serve cheerfully. I know that many of you, once you have tasted Navy life, will want to stay in and make it a career. There are glowing opportunities for service and a useful life. Good men are needed to carry on with the future. I know you will give it every chance before coming to a decision. If you do these things you may safely say to yourselves at the end: "My debt is paid."

PERSONAL RESPONSIBILITY

(Concluded from page 348)

individuals we can know now that no community is more generous and broad-minded than the most generous and broad-minded person in it and that there is no courage, no wisdom, no love or hate in an organization, except as it resides in the minds and personalities of the individuals who compose it. And if these qualities cannot by any social alchemy be transferred from us as individuals to the organizations of which we are a part, if these qualities exist only in us, then it seems to me clearly to establish our individual responsibility for their cultivation and their preservation. It is an antidote to the discouragement of seeing ourselves as little cogs in a great machine. We must keep before us the fact that it is the individual, some individual, who determines the character of every organization.

It is our responsibility in an age of power to retain our capacity to see in every personality a unique being, capable of unfolding all the potentialities of the race itself. No matter how much we must organize ourselves, we must guard against the danger of thinking of human beings as impersonal units — of speaking of management and labor rather than of managers and of people whose work is not managerial, of man power rather than of men and women, of youth rather than of boys and girls. We must try to capture the insight of Sir William Watson's poem:

Momentous to himself, as I to me,
Hath each man been that ever woman bore;
Once, in a lightning-flash of sympathy,
I felt this truth, an instant, and no more.

It is our responsibility in an age which is equipped with tremendous powers of destruction, never to allow them to be used to destroy the worth, the dignity, and the importance of individuals. We must prolong the lightning-flash of sympathy for a lifetime, not merely for an instant.

ESTABLISHED 1818

Brooks Brothers,

CLOTHING,

Mens Furnishings, Hats & Shoes

346 MADISON AVENUE COR. FORTY-FOURTH ST.
NEW YORK 17, N. Y.

RECONVERSION

Things that have been scarce as hen's teeth due to wartime shortages are gradually coming back again in slowly increasing stocks. We hope as earnestly as do our customers that reconversion may be accelerated as rapidly as possible — aiming towards an early plenitude of everything that people need. We are doing the best we can to cope with continuing shortages of fine materials and skilled labor — and are making progress. Things of our own well-known make or design, however, are naturally in greater demand than ever . . . and like anything else worth while, they take time. We want to thank our customers for their patience and courtesy — and earnestly pledge our very best cooperation.

BOSTON BRANCH

46 NEWBURY, COR. BERKELEY STREET, BOSTON 16, MASS.



Air Conditioning Design — 6

QUESTION: With the reduced number of room air changes used in air conditioning, how can overcooling or overheating be prevented which is caused by the normal lag from the time the coil responds until the thermostat can sense this response.

ANSWER: By controlling the coil from a thermostat in the supply duct which will serve as a high and low limit control. Then reset this thermostat automatically by the room thermostat.

Comfort in air conditioned spaces implies that the occupant is neither hot nor cold. Our understanding of control refinements insures your personal comfort.

HAROLD J. RYAN, INC.

101 Park Avenue

New York 17, N. Y.

WILLIAM D. NEUBERG COMPANY

Chemicals

GRAYBAR BUILDING 420 LEXINGTON AVE.

NEW YORK 17 N. Y.

TELEPHONE LEXINGTON 2-3324



Transits and Levels are used on all largest works and by U. S. Govt. for utmost precision. Rental Insts. New catalog, just issued, sent gratis. A souvenir plumb-bob sent for 3¢ postage.

BUFF & BUFF CO. Boston 30, Mass.

Henry A. Buff '05

PERSONAL RESEARCH into the future leads to life insurance as the solution to freedom from want

STANLEY W. TURNER '22

former student of M. I. T. will be glad to give you the facts.

Telephone CAPitol 0456 or address
30 State Street, Boston, Mass.

**PROVIDENT MUTUAL
LIFE INSURANCE COMPANY**
OF PHILADELPHIA, PENNSYLVANIA



William H. Coburn, '11

William F. Dean, '17

William H. Coburn & Co.

INVESTMENT COUNSEL

68 Devonshire St.

Boston, Mass.

TODAY'S PROBLEM

(Continued from page 354)

conditions in order to co-operate with the harassed ground forces, their losses due to weather (crashes on take-off and landing and collisions in the air) were greater than the losses due to enemy action.

Air mass analysis, global weather forecasting, long-range forecasting, and synoptic climatology all have improved our ability to forecast weather, but much more work has to be done before meteorology has made its proper contribution to air safety. More information and more accurate information is required.

Ice formation on the wings and other parts of the airplane has long constituted a serious hazard. Further development of pneumatic, thermal, and chemical de-icers is required.

Fog remains our greatest enemy. Radio and radar locating devices and instrument landing equipment are now available but must be simplified, standardized, and installed.

On V-E Day, three bombardment groups in the Eighth Air Force had been equipped and trained to operate regardless of weather conditions. They were able to take off, fly to and bomb the targets, return, and land without ever having seen the ground. In time, the entire air force would have had this training. The Army Air Forces has an "all weather unit" in training now, which is developing equipment for flying in all kinds of weather. When perfected, the equipment and techniques it develops will be made available to the air lines. There are many safety appliances developed now which should be installed and made available to assist the private flier and the airline operator.

During the war the microwave early warning set enabled us to rendezvous our fighters with our bombers, to detect and intercept enemy fighters, to assist in the navigation of our planes, and to tell them, at all times, exactly where they were — within the range of the equipment, which was about 250 miles.

The loran system of navigation, developed in the Radiation Laboratory at M.I.T., was, by V-J Day, installed throughout the Pacific area and in most parts of the world, so that at all times an airplane navigator knew where he was, within a mile.

Oddly enough, all of the known safety devices are not yet in general use. The problem is not only the development and perfection of equipment but its purchase, installation, and employment. While continuing development, we should install the best equipment now available.

(Concluded on page 390)



**PRECISION-GAUGED
HAIRSPRINGS
AND
FINE ROLLED WIRE**

PRECISION PRODUCTS COMPANY
WALTHAM, MASSACHUSETTS

ROBERT I. BRADLEY '20

for
**REPRODUCTION
PROCESSES**
*Blueprints · Photostats
Ozalid Whiteprints
Photo-lithography*
SPAULDING-MOSS CO.
42 Franklin St. Boston 10, Mass.

In
**NEW
ENGLAND**

McCREERY and THERIAULT

Building Construction

126 NEWBURY STREET

BOSTON, MASS.

THE MURRAY PRINTING COMPANY

A Complete Printing Organization
Letterpress :: Offset :: Binding

18 AMES STREET
CAMBRIDGE

POST-WAR PLANS

As Regards Service—

More than ever you will need BLUEPRINT, OFFSET and PHOTOPRINT service commensurate with the split-second tempo of your office.

ELECTRO SUN COMPANY established its reputation 38 years ago, by catering to engineers, architects, individual and commercial establishments.

You get what you want on time—economically, efficiently and cheerfully.

ELECTRO SUN CO., Inc., NEW YORK, N. Y.

PHOTO LITHOGRAPHS • BLUEPRINTS • PHOTO COPIES • LITHOPRINTS

161 WASHINGTON STREET

GRAND CENTRAL TERMINAL BLDG.

BArclay 7-2334

MUrray Hill 6-6526

A. L. WEIL '01

J. C. DUFF '86

JOHN T. KILEY '18

ALBERT J. KILEY '21

JAMES A. KILEY COMPANY

SOMERVILLE, MASSACHUSETTS

PUBLIC UTILITY BODIES
and
ASSOCIATED EQUIPMENT



TELEPHONE GAS
ELECTRIC LIGHT
and POWER

TODAY'S PROBLEM

(Concluded from page 388)

Every major airfield should install an instrument landing system, and every transport airplane should have the necessary airborne equipment and a pilot trained to use it. Every major airport should have a radar set in order to keep a constant check on all planes in the landing pattern. Planes flying the transcontinental routes should be followed by radar at all times and, in bad weather, should be advised if they are off course or in danger. The entire transcontinental system should be tied together with a microwave communications network so that the location of every plane is known at each moment, and this information can be passed on to any airplane desirous of receiving it. Storms and mountains could then be readily avoided, and landings at destination expedited.

But it is not only the world of technology which is steadily evolving. The same trend exists in the fields of human relationships, as described, for example, by political and social science. During my lifetime, income taxes appeared in our country. The first major effort to secure international peace was made. The League of Nations failed, but a new effort, which we hope will take advantage of the lessons of the past and will succeed, is now being formed. In my generation the labor unions became powerful organizations, and security became a watchword for the masses of the people.

With the idealism, energy, and inexperience of youth, it is traditional for each generation to say that the preceding generation failed and to predict confidently that the new generation is far too smart and high-minded to make such mistakes. To a certain extent such claims are true and form part of the driving force which will lead us, we

still believe, to an ever better world. There lurk here, however, also a danger and a warning.

Not long after the victorious end of World War I it became evident that the millennium was far from having been achieved, and there was common talk among the young people of that period that the older generation had made a mess of things. Unfortunately, this was largely true. Now, however, after World War II the affairs are in the hands of people approximately one generation older than those of World War I, the critics of the former generation. I think, as we look over our internal and also our international affairs, we can see a distinct danger of even greater failures. There is, however, the possibility of a very great step forward in the art of international living and improvement in our domestic standards of life. In effect, today's problems, wisely handled, should lead to a peaceful, better world. In addition to wisdom, there is a very urgent need for courage and perseverance, for a firm resolve to see things through to a finish, for a sense of responsibility and public duty in the mind and heart of every citizen, which, rather than temporary indulgence or self-interest, will determine his course of action in this critical period.

In discussing these problems, I have spoken of your generation and of my generation. Fortunately, these two overlap.

Actually, the problems to which I have referred do not belong to only one generation. They are passed on from each generation to the next in a continuous and closely interlinking fashion. It is inevitable, nevertheless, that the young men of your age will before long be carrying the primary responsibilities for this country and for the world, and it is important that we all join forces to handle these problems with vision, skill, and courage.

LEONARD CONSTRUCTION COMPANY

Engineers and Contractors

SINCE 1905

IN ALL THE AMERICAS AND FAR EAST

37 South Wabash Ave. 420 Lexington Ave.
Chicago New York City

Ingenieros S.A. de C.V., Mexico

MONSANTO CHEMICAL COMPANY

Merrimac Division

EVERETT
MASSACHUSETTS

*The largest and oldest
chemical manufacturer in New England*

PREPARATORY SCHOOLS FOR BOYS

CHAUNCY HALL SCHOOL

Founded 1828. The School that confines itself exclusively to the preparation of students for the Massachusetts Institute of Technology.

FRANKLIN T. KURT, *Principal*

553 Boylston Street, Boston, Mass.

HUNTINGTON SCHOOL FOR BOYS

Four forms beginning with 9th grade.
Thorough preparation for entrance to M.I.T.
and other technical schools.
Regular and summer courses.

320 Huntington Ave., Boston

Tel. Kenmore 1800

DWIGHT

8th grade through high—day school for boys. Long, successful record (65th year). Individual attention in small classes. Skillful instructors. Prepares for careers at ALL colleges, West Point, Annapolis, Coast Guard. Special accelerated program for completion of high school requirements. Evening dept. (co-ed) for adult students. *Catalog on request. Conference invited.*

ERNEST GREENWOOD, *Headmaster*

72 Park Ave. Between 38-39 Streets, New York

*For a listing on this page
please write to*

BUSINESS MANAGER

The Technology Review, M.I.T., Cambridge, Mass.

PROFESSIONAL CARDS

JACKSON & MORELAND

Engineers

Public Utilities — Industrials
Railroad Electrification
Design and Supervision — Valuations
Economic and Operating Reports

BOSTON

NEW YORK

H. K. BARROWS, '95

M. Am. Soc. C. E.

CONSULTING HYDRAULIC ENGINEER

*Hydro-electric Developments — Water Supplies. Reports, Plans,
Supervision. Advice, Appraisals.*

6 BEACON STREET

BOSTON, MASS.

EADIE, FREUND AND CAMPBELL

CONSULTING ENGINEERS

500 FIFTH AVENUE

NEW YORK 18, N. Y.

Plans and Specifications — Examinations and Reports

Power, Heating, Ventilating, Electric, Plumbing,
Sprinkler, Refrigerating, Elevator Installations, etc.,
in Buildings and Industrial Plants

J. K. CAMPBELL, M. I. T. '11

STARKWEATHER ENGINEERING CO.

INCORPORATED

*Engineers and Contractors for Pumping Plants
Boiler and Power Plants, Cooling Water
and Heat Recovery Systems*

246 WALNUT STREET, NEWTONVILLE

BIGelow 8042

Wm. G. Starkweather, M.E.

J. B. Starkweather, B.S.

Cornell '92

M.I.T. '21

H. A. KULJIAN & CO.

CONSULTANTS • ENGINEERS • CONSTRUCTORS

Specialists in

UTILITY, INDUSTRIAL and CHEMICAL FIELDS

1518 WALNUT STREET

PHILADELPHIA, PA.

H. A. KULJIAN '19

FABRIC RESEARCH LABORATORIES

INCORPORATED

*Research, Testing and Consulting
for Textile and Allied Industries*

665 BOYLSTON STREET

Boston, Mass.

W. J. HAMBURGER, '21

K. R. Fox, '40

E. R. KASWELL, '39

GILBERT ASSOCIATES, INC.

ENGINEERS AND CONSULTANTS

Allen W. Reid '12

Malcom G. Davis '25

F. E. Drake '05

Vice President

Steam, Hydro, Diesel Power Plants; Industrial Structures;
Plant Safety, Labor Relations, Utility Rates, Valuations,
Reports; Large Scale Purchasing; Industrial Laboratory

New York
61 BroadwayReading, Pa.
412 Washington St.Washington
Nat'l Press Bldg.

FAY, SPOFFORD & THORNDIKE

Engineers

Airports — Bridges — Water Supply and Sewerage
Port and Terminal Works — Fire Prevention

INVESTIGATIONS

DESIGNS

SUPERVISION OF CONSTRUCTION

BOSTON

NEW YORK

WALLACE CLARK & COMPANY

CONSULTING MANAGEMENT ENGINEERS
SINCE 1920

Planning for Research and Development,
Sales, Engineering, Production, Finance,
Industrial Relations, Overall Management

521 FIFTH AVENUE

NEW YORK 17, N. Y.

Literature on Request

MAURICE A. REIDY

Consulting Engineer

BRIDGES

BUILDINGS

STRUCTURAL DESIGNS

FOUNDATIONS

CONSTRUCTION CONSULTANT AND ARCHITECTURAL ENGINEER

Estimates and Appraisals

101 TREMONT STREET

BOSTON, MASS.

THE COSMA LABORATORIES CO.

1545 East 18th Street

Cleveland 14, Ohio

Chemical Analysis — Testing — Consulting Engineering
Testimony and Research

H. SEYMOUR COLTON, M.I.T. '21

R. W. FRISCHMUTH, Case '38

Director

Assistant Director

MORAN, PROCTOR, FREEMAN & MUESER

CONSULTING ENGINEERS

420 LEXINGTON AVENUE

NEW YORK 17, N. Y.

Foundations for Buildings, Bridges and Dams;
Tunnels, Bulkheads, Marine Structures; Soil Studies and Tests;
Reports, Design and Supervision.

Pardo, Proctor, Freeman & Mueser
Ingenieros Consultores
Ap. Correos 614, Caracas, Venezuela

WILLIAM H. MUESER, '22
GEORGE T. GILMAN, '23

PALMER RUSSELL CO.

Realtors

Real Estate Brokers

Property Management

Appraisals and Mortgages

1320 BEACON STREET

BROOKLINE, MASS.

Edgar P. Palmer '25

William W. Russell '22

FRANK MASSA

Electro-Acoustic Consultant

DEVELOPMENT — PRODUCTION DESIGN — PATENT ADVISOR

Loud Speakers — Microphones — Sound Powered Telephones
Supersonic Generators and Receivers
Electro-Acoustic Instruments
Underwater Sound

3393 DELLWOOD ROAD

CLEVELAND HEIGHTS, OHIO

AREA PLACEMENT CHAIRMEN FOR MASSACHUSETTS INSTITUTE OF TECHNOLOGY

*Each man listed below will have information about positions for
M. I. T. Graduates who want to locate in his particular area*

ALABAMA

PRESCOTT V. KELLY '13, Brown-Marx Company, Brown-Marx Building, Birmingham 3

ARKANSAS

LESLIE A. JACKSON '19, Manager Little Rock Municipal Water System, Little Rock

CALIFORNIA

A. B. COURT '10, Russ Building, 235 Montgomery Street, San Francisco

FORD W. SAMMIS '28, 433 South Spring Street, Los Angeles 13

COLORADO

ALFRED E. PERLMAN '23, Denver and Rio Grande Western Railroad Company, Denver 1

CONNECTICUT

FREDERICK W. GREEN '32, Nash Engineering Company, Wilson Avenue, South Norwalk (Bridgeport area)

GEORGE L. MYLCHREEST '10, 238 Palm Street, Hartford

CHARLES E. SMITH '00, Railroad Office Building, New Haven

DISTRICT OF COLUMBIA

MAJOR HARRY H. FISK '22, 4351 Fessenden Street, N.W., Washington 15, D. C.

FLORIDA

GEORGE W. SIMONS '15, Hildebrandt Building, Jacksonville

CLARENCE P. THAYER '23, 4212 N. W. Sixth Avenue, Miami

FRANKLIN O. ADAMS '07, 305 Morgan Street, Tampa

GEORGIA

WILLIAM E. HUGER '22, 11 Marietta Street, N.W., Atlanta 1

ILLINOIS

EDWARD F. ABBOTT, JR. '31, Birtman Electric Company, 4140 West Fullerton Parkway, Chicago

INDIANA

FRANK C. BALKE '14, Balke and Krauss Company, 427 West Market Street, Indianapolis

KANSAS

FRED C. KOCH '22, Winkler-Koch Engineering Co., 335 West Lewis Street, Wichita

KENTUCKY

TINSLEY W. RUCKER III '31, The Crescent Panel Company, 32d and Market Streets, Louisville 12

LOUISIANA

THEODORE O. HOTARD '12, 221 Pelican Avenue, New Orleans 14

MAINE

FRANK A. KNIGHT '38, Eastern Corporation, Bangor

LEWIS D. NISBET '09, 44 Montrose Avenue, Portland

MARYLAND

GEORGE W. SPAULDING '21, 1605 Lexington Building, Baltimore 1

MASSACHUSETTS

ROBERT F. BURNETT '10, 85 North Main Street, Fall River

A. RUSSELL PIERCE, JR. '31, Palmer Scott Boatyard, New Bedford

LYNN WETHERILL '25, High Voltage Bushing Engineering Division, General Electric Company, 100 Woodlawn Avenue, Pittsfield

WILLIAM WILDER '98, 4 Dayton Place, Worcester

MICHIGAN

ALLYNE C. LITCHFIELD '17, U. S. Rubber Company, 6600 East Jefferson Avenue, Detroit 32

MINNESOTA

LELAND CLAPPER '09, 5600 London Road, Duluth

CHARLES W. DREW '19, Minneapolis Regulator Company, Minneapolis

MISSOURI

HARRY L. HAVENS '09, Havens Structural Steel Company, 1713 Crystal, Kansas City

WESLEY W. WEDEMEYER '30, Wedemeyer and Hecker, Architects, 319 North Fourth Street, St. Louis 2

MONTANA

WALTER R. C. RUSSERT '18, Anaconda Copper Company, Butte

NEBRASKA

LOUIS A. METZ '23, Ceco Steel Products Co., 1141 North 11th Street, Omaha

NEW HAMPSHIRE

CARL A. HALL '08, Hall Bros. Company, Concord

NEW JERSEY

GEORGE A. CHUTTER '21, 109 Central Avenue, Glen Rock (Newark area)

NEW YORK

ANDREW F. ALLEN '12, State Department of Health, Albany

THOMAS H. SPELLER '29, General Engineering Company, 785 Hertel Avenue, Buffalo 7

JOHN C. FRUIT '02, Equitable Life Insurance Society of U. S., 393 7th Avenue, New York 1

RAYMOND G. BROWN '16, Comstock and Westcott Inc., Niagara Falls

C. KING CROFTON '22, 1132 Lincoln-Alliance Bank Building, Rochester

THERON C. JOHNSON '33, General Electric Company, 1 River Road, Schenectady 5

J. MURRAY HASTINGS '13, 606 Hills Building, Syracuse

OHIO

JAMES B. HOLDEN '30, 276 Sundale Road, Akron

KENNETH A. WRIGHT '19, Johnson Service Company, 1905 Dunlap Street, Cincinnati 14

CHARLES B. ROWLEY '12, Charles Bacon Rowley and Associates, Keith Building, Cleveland

JAMES H. BLODGETT '20, Superintendent, Division of Sewage Treatment, Columbus

EUGENE HERZOG '27, 26 Cliff Street, Dayton

CHARLTON P. WHITTIER '27, Owens-Illinois Glass Company, P. O. Box 1035, Toledo 1

OKLAHOMA

W. J. SHERRY '21, 804 Kennedy Building, Tulsa

OREGON

ROBERT E. CUSHMAN '06, 618 N. W., Front Street, Portland 9

PENNSYLVANIA

PERCY TILLSON '06, 3003 North Front Street, Harrisburg

EDWARD J. HEALY '23, Philadelphia Brewing Company, 6th and Clearfield Streets, Philadelphia 33

HAROLD L. LANG '09, Carnegie Institute of Technology, Pittsburgh 13

G. C. WILSON '15, 907 East King Street, Lancaster

ROBERT FAULKNER '04, Gravel Hill, Schaefferstown

LOUIS MORSE '96, York Corporation, Roosevelt Avenue, York

RHODE ISLAND

DONALD G. ROBBINS '07, c/o International Braid Company, 47 Charles Street, Providence

TENNESSEE

DANA M. WOOD '06, 619 Union Building, TVA, Knoxville

DONALD W. SOUTHGATE '11, Nashville Trust Building, Nashville 3

TEXAS

JONATHAN A. NOYES '12, 4848 Northwest Highway, Dallas

JOE McEVoy, McGowan Avenue, Houston

UTAH

GEORGE M. GADSBY '09, Utah Power and Light, Kearns Building, Salt Lake City

VIRGINIA

JOHN STACK '28, N.A.C.A., Langley Field, Newport News

DONALD N. FRAZIER '11, 1226 Mutual Building, Richmond

WASHINGTON

HOLLAND H. HOUSTON '24, 215 Fifth Street, Olympia (Seattle area)

HOMER C. BENDER '09, 921 East 19th Street, Spokane

WISCONSIN

PHILIP N. CRISTAL '17, 720 East Wisconsin Avenue, Milwaukee 2

TECHNOLOGY MEN IN ACTION

THE ALUMNI FUND — ITS PROBLEMS AND GROWTH

SPRING

NOT just another spring. Far different, in many ways, from those we have seen in the last few years. A new term began in March. As the entering students lined up for their books and materials at the Coop, a marked change was noticeable. They were a serious-looking group of boys. There was no horseplay as they stood in long lines, awaiting their turn. They were used to that sort of thing, but last spring they were standing in lines in Okinawa, Italy, and Stalag No. 3. Now they have returned to try and make up what they lost fighting our war. For some — maybe for most — it will not be an easy task.

We owe these returning veterans much. We also owe it to ourselves and to our country to see that they and future college generations receive the best technological training possible. The past war showed how essential to our well-being, and even to our continued existence, is such a reservoir of competent, thoroughly trained scientists and engineers. To maintain M.I.T. in the leading role which it has always occupied requires constant changes and additions to plant and facilities. In his Alumni Day address, President Compton listed a number of immediate needs of the first order, the realization of which calls for the expenditure of more than nine million dollars. Some of these funds are already at hand. Much still remains to be raised. The Alumni Fund, of which the accumulated total is now in excess of a third of a million dollars, will aid materially in satisfying some of these requirements.

A new Fund year has just begun. You who read this have contributed in the past. Your continued support is urgently needed, that the Fund may serve M.I.T. in the greatest possible degree. If you have not already contributed, will you do so now?

TECHNOLOGY MEN IN ACTION

M.I.T. MEN AT WAR

Up to March 16 over 9,314 Institute Alumni, including 37 Admirals, 8 Commodores, and 95 Generals, were recorded as being in the active naval or military services of the United Nations. Among the new promotions to be reported is Commodore Milton O. Carlson '22. There were 283 Alumni who had been decorated, and 177 who had made the supreme sacrifice.

With its issue dated November, 1942, The Technology Review began publishing "M.I.T. MEN AT WAR." Although hostilities have ended, The Review plans to continue this page for the next several months in order to record information on M.I.T. men in the services which, to date, has been impossible to obtain. As a matter of convenience, promotions and corrections in the rank previously given are grouped under a single heading, "Changes in Rank." The Review Editors are greatly indebted to the many Alumni and other readers who are continuing to co-operate so helpfully in reporting inevitable errors of omission and commission which they note in these listings.

NEW DECORATIONS

- 1917 Sherman, Forrest P., *Vice Adm., U.S.N., Distinguished Service Medal.*
- 1921 Moses, Raymond G., *Brig. Gen., U.S.A., French Legion of Honor, degree of Officer.*
- 1922 Ronneberg, Conrad E., *Lt. Col., U.S.A., Bronze Star—for planning, organizing, and conducting the first Army information and education staff school in the European Theater of Operations.*
- 1925 Gow, Ralph F., *Col., U.S.A., Distinguished Service Medal.*
- 1928 Newhall, Charles W., Jr., *Col., U.S.A., Legion of Merit—for contribution to a comprehensive aircraft distribution and inventory control system within the Army Air Forces.*
- 1931 McBrien, Joseph, *Maj., U.S.A., Legion of Merit—for developing and establishing an outstanding standard operating procedure for the control of personnel authorization and strength while serving at the Los Angeles Port of Embarkation.*
- 1935 Burton, John R., Jr., *Col., U.S.A., Bronze Star—in connection with the invasion planning of Africa and Europe; Legion of Merit—in connection with the invasion of Germany.*
- 1942 *Penn, Leo H., *Capt., U.S.A., Bronze Star, posthumously,—in connection with military operations in New Guinea and the Philippines as a traffic officer in the Signal Section of the Eighth Army.*
- 2-46 ★ Conlin, Joseph A., *Pfc., U.S.A., Silver Star, posthumously,—for gallantry in action in the vicinity of Mittelwihr, France.*
- Simon, Richard C., *Pfc., U.S.A., Purple Heart; Bronze Star.*

NEW LISTINGS

U.S.A.

- 1936 Lin, Tung H., *Lt. Col.*
- 1941 Driscoll, Michael, *2nd Lt.*
- 1942 Wilson, Duncan M., *Sgt.*
- 2-46 ★ Conlin, Joseph A., *Pfc.*
- Munnikhuyzen, Richard D., *Capt.*
- 2-47 Kramer, Robert, *Pvt.*
- Newton, Frederic M., *Pfc.*
- Vagliano, Alexander M. F., *Pvt.*

U.S.N.

- 1934 Cooper, John M., *Lt.*
- 1941 Ahrendt, William R., *Lt. (j.g.)*
- 6-45 Cooper, Daniel I., *Ens.*
- Hahn, Harry B., *Comdr.*
- Ostrower, Donald A., *Ens.*
- Paternoster, Nicholas L., *Ens.*
- 2-46 Brandeau, Edward P., *Ens.*
- Butler, Lewis H., *A.S.*
- Claxton, Edmund V., *E.T.M.Sc.*
- Goldstein, Stanley J., *Ens.*
- Joyce, Maurice V., Jr., *Ens.*
- 10-46 Rizika, Jack W., *Sic.*
- 2-47 Bierhoff, Frederic A., *Sic.*
- Cole, Frank G., *Sic.*
- Hartschorn, Stanford H., Jr., *Sic.*
- Kallman, Ronald J. R., *Sic.*
- Morel, Richard D., *Sic.*
- Pollard, Robert, 3d, *A.S.*
- 6-47 Adams, Orvis E., *A.R.M.Sc.*
- 10-47 Ranger, Casper, 3d, *Sic.*

★ Killed in Action

CHANGES IN RANK

U.S.A.

- 1913 Muther, Walter P., *Maj. to Lt. Col.*
- 1921 Dellenbaugh, Frederick S., *Lt. Col. to Col.*
- 1922 Lloyd, Leon A., *Maj. to Lt. Col.*
- Nesmith, James, 2nd, *Lt. Col. to Col.*
- Ronneberg, Conrad E., *Maj. to Lt. Col.*
- 1923 Beretta, John W., *Lt. Col. to Col.*
- Prinz, Robert B., *Capt. to Maj.*
- 1926 Peterson, Gustave R., *Lt. to Maj.*
- 1927 Berkeley, William P., *Lt. to Lt. Col.*
- 1928 Newhall, Charles W., Jr., *Lt. Col. to Col.*
- 1929 Malmstrom, I. Theodore, *Maj. to Lt. Col.*
- Mead, Francis M., *Lt. to Capt.*
- 1930 Fasce, Egi V., *1st Lt. to Maj.*
- 1932 Moy, Arthur, *2nd Lt. to Capt.*
- 1933 Galvin, Thomas F., *Capt. to Maj.*
- Partridge, Winfield, Jr., *Capt. to Maj.*
- 1934 Nashner, Sydney, *Capt. to Maj.*
- 1935 Burton, John R., Jr., *Lt. Col. to Col.*
- Kimball, Henry B., *Maj. to Lt. Col.*
- 1936 Kanters, Lawrence, *Lt. Col. to Col.*
- O'Neil, James E., Jr., *1st Lt. to Maj.*
- 1937 Downs, John A., *Lt. to Capt.*
- Kierstead, Fred D., *Capt. to Maj.*
- 1938 Garber, Thomas, *Capt. to Maj.*
- 1939 Falkof, Melvin M., *Capt. to Maj.*
- Fober, Henry L., *1st Lt. to Capt.*
- Schaller, Frederick F., Jr., *1st Lt. to Capt.*
- 1940 Knight, Joseph K., *1st Lt. to Capt.*
- McKee, John M., Jr., *2nd Lt. to 1st Lt.*
- *Swift, Dean E., *Lt. Col. to Col.*
- 1941 Flowers, Fred F., *Lt. to Capt.*
- Simon, Robert H., *Pvt. to T.5.*
- Thornton, James S., *Maj. to Lt. Col.*
- Van Greenby, Stanley H., *Lt. to Capt.*
- 1942 Bing-You, George S., *Cadet to Capt.*
- Bloom, Robert I., *Lt. to Capt.*
- Fay, Robert J., *Lt. to Capt.*
- Prohaska, Charles A., *Lt. to Capt.*
- Quinn, John J., *1st Lt. to Capt.*
- 1943 Housman, Lewis J., *Pvt. to 2nd Lt.*
- Ingham, James D., *2nd Lt. to 1st Lt.*
- 2-44 Bennett, Frank K., *Corp. to Lt.*
- Carter, Richard L., *Pvt. to 2nd Lt.*
- Faurot, Robert S., *2nd Lt. to 1st Lt.*
- Lamport, Samuel H., *Pvt. to 1st Lt.*
- 10-44 Caldwell, Walter H., *Pfc. to T.5.*
- Nelson, Donald H., Jr., *T.Sgt. to Lt.*
- 6-45 Berman, James K., *Corp. to Sgt.*
- Cross, Henry H., *Corp. to Sgt.*
- Olsen, Ralph C., *Pfc. to M.Sgt.*
- Schumacher, Robert K., *Pvt. to Pfc.*
- 2-46 Dodge, Harold S., *Pfc. to T.5.*
- Fleming, Joseph D., Jr., *Corp. to 2nd Lt.*
- Peterson, Robert C., *Pvt. to Lt.*
- Simon, Richard C., *Pvt. to Pfc.*
- Small, Robert L., *Pvt. to Pfc.*
- Thomas, Downing A., *Pvt. to S.Sgt.*
- Young, Frink M., *Corp. to T.4.*

† Missing in Action

‡ Prisoner of War

U.S.N.

- 1917 Sherman, Forrest P., *Rear Adm. to Vice Adm.*
- 1922 Carlson, Milton O., *Capt. to Commo.*
- Hayes, Ralph S., *Comdr. to Capt.*
- 1924 McFarland, George C., *Lt. Comdr. to Comdr.*
- 1931 Cook, J. Franklin, *Lt. to Lt. Comdr.*
- 1932 Dunning, Allan L., *Lt. Comdr. to Capt.*
- 1933 Cashman, John J., Jr., *Lt. to Lt. Comdr.*
- 1935 McKeon, John A., *Lt. Comdr. to Comdr.*
- 1936 Doggett, Towers, *Lt. to Lt. Comdr.*
- 1938 Bergseth, Frederick R., *Lt. (j.g.) to Lt. Comdr.*
- 1939 Darrow, John B., *Lt. to Lt. Comdr.*
- 1940 Burnap, Clement F., *Lt. (j.g.) to Lt. Comdr.*
- Flynn, Maurice E., Jr., *Ens. to Lt.*
- 1943 Adams, Robert W., *Ens. to Lt. (j.g.)*
- Adams, Spencer M., *Lt. Comdr. to Comdr.*
- Considine, John M., *Ens. to Lt. (j.g.)*
- De Frate, Louis A., *Ens. to Lt. (j.g.)*
- Greenewald, Herbert, Jr., *Ens. to Lt. (j.g.)*
- Hirschberger, Carl R., *Lt. Comdr. to Comdr.*
- Mark, William, *Sic. to Sp.Sc.*
- Meigs, Charles H., *Lt. Comdr. to Comdr.*
- Richmond, Robert P., *Sic. to Ens.*
- Thoele, John A., Jr., *Lt. (j.g.) to Lt.*
- 2-44 Bliss, Warren E., *Ens. to Lt. (j.g.)*
- Brown, Kenneth S., *Lt. to Comdr.*
- Burdick, Robert S., *Lt. Comdr. to Comdr.*
- Crowley, Joseph C., *Sic. to R.T.2c.*
- Damsgaard, Kjeld, *S.2c. to E.T.M.Sc.*
- Feingold, David S., *Sic. to E.T.M.Sc.*
- Flowers, Langdon S., *Ens. to Lt. (j.g.)*
- Jakel, Arnold E., *Lt. Comdr. to Comdr.*
- Lindsay, William R., *Mid. to Ens.*
- Marr, Robert M., Jr., *Ens. to Lt. (j.g.)*
- Mavor, James W., Jr., *A.S. to Lt. (j.g.)*
- Oppenlander, Robert, Jr., *Ens. to Lt. (j.g.)*
- Roden, Carl C., Jr., *Ens. to Lt. (j.g.)*
- Schoenwald, Ernest T., *Ens. to Lt. (j.g.)*
- Smith, Robert B., *Sic. to R.T.3c.*
- Tucker, Beverley B., *Ens. to Lt. (j.g.)*
- Weldon, Albert R., *Lt. Comdr. to Comdr.*
- Wildner, Perry W., Jr., *S.2c. to Sic.*
- 10-44 Cooper, George R., Jr., *A.S. to Ens.*
- Eitington, Mark, *S.2c. to E.T.M.Sc.*
- Fryer, Edward R., Jr., *Mid. to Ens.*
- Grafe, Ernst O., *Ens. to Lt. (j.g.)*
- Guptill, Frank E., Jr., *A.R.M.Sc. to A.R.M.2c.*
- Lambert, Kenneth A., Jr., *Mid. to Ens.*
- Newberg, Eric G., Jr., *Lt. to Lt. Comdr.*
- Quattrochi, Peter L., *R.T.Sc. to E.T.M.Sc.*

* Died or Killed in Service

- Roddia, Louis H., Jr., *Lt. (j.g.) to Lt. Comdr.*
- Smith, Deming W., *Sic. to Mid.*
- Tome, John M., *Ens. to Lt. (j.g.)*
- White, John W. L., *A.S. to Ens.*
- 6-45 Armstrong, George M., Jr., *A.S. to Ens.*
- Arison, Robert A., Jr., *Sic. to R.T.2c.*
- Bickford, George H., *A.S. to Ens.*
- Collet, William A., *Sic. to R.T.2c.*
- Crane, John K., *Sic. to E.T.M.Sc.*
- Goldie, Charles H., *A.S. to Ens.*
- Hahn, Aaron F., Jr., *A.S. to Ens.*
- Kelly, Edward J., Jr., *A.S. to E.T.M.Sc.*
- Kuhns, Read M., Jr., *A.S. to Sic.*
- Levin, James A., *Sic. to E.T.M.Sc.*
- Markey, Thomas S., *A.S. to Ens.*
- Oxenham, Alfred J., *A.S. to Ens.*
- Patterson, Jerome A., *A.S. to Ens.*
- Reed, Edwin A., *A.S. to Ens.*
- Roche, Albert V., Jr., *Y.Sc. to Y.2c.*
- Smith, Ogden R., *A.S. to S.2c.*
- Smith-Vaniz, William R., Jr., *Sic. to R.T.2c.*
- Strnad, James J., *A.S. to Ens.*
- 2-46 Dayton, Peter G., *S.2c. to H.A.1c.*
- Fisher, Herbert H., *R.T.Sc. to R.T.2c.*
- Krauter, Robert B., *Sic. to E.T.M.Sc.*
- McDonagh, Robert J., *Sic. to A.E.T.M.Sc.*
- Miller, Theodore W., *Mid. to Ens.*
- Schlottenmeyer, Thomas J., *Sic. to R.T.3c.*
- Stone, Alan D., *R.T.Sc. to R.T.2c.*
- Turnburke, Vernon P., Jr., *Sic. to R.T.3c.*
- Zwaryck, Eugene J., *S.2c. to Aer.M.Sc.*
- 10-46 Corson, Raymond F., *S.2c. to A.C.*

U.S.C.G.

- 1929 Creedon, William E., *Lt. Comdr. to Comdr.*
- 1939 Clift, Charles W., *Cadet. to Lt.*
- 10-44 Daniels, Milton R., Jr., *Ens. to Lt. (j.g.)*

RANKS NOT PREVIOUSLY PUBLISHED

U.S.A.

- 1943 Lusti, John, *1st Lt.*
- 6-45 Kahn, Burton H., *Pfc.*
- Sawyer, Paul B., *T.5.*

U.S.N.

- 2-44 Christie, John F., *Ens.*
- 10-44 Walsh, Gregory F., Jr., *Ens.*

CASUALTIES

- 1916 *Harms, Henry W., *Brig. Gen., U.S.A.*
- 1918 *Parkinson, Donald B., *Maj., U.S.A.*
- 1930 *Cofran, Everett S., *Maj., U.S.A.*
- *Williams, Randolph P., *Col., U.S.A.*
- 1936 *Prescott, John G. F., *Comdr., U.S.N.*
- 1940 *Swift, Dean E., *Col., U.S.A.—in Manila, of Poliomyelitis.*
- 1943 ★ Fenton, Douglas G., *Lt. (j.g.), U.S.N.—when submarine was sunk.*
- 2-46 ★ Conlin, Joseph A., *Pfc., U.S.A.—in the vicinity of Mittelwihr, France.*

** Wounded

ALUMNI AND OFFICERS IN THE NEWS

Busy Bees

¶ HOWARD P. CLAUSSEN '16, as vice-president of Bemis Brothers Bag Company, in charge of cotton mills and cotton operations, and director of the Cotton-Textile Institute, Inc.

¶ CHARLES H. HERTY, Jr., '21, as national president of the American Society for Metals.

¶ THOMAS F. MURPHY '21, as assistant Federal commissioner of patents.

¶ RICHARD W. SMITH '21, as assistant manager of the natural resources department of the Chamber of Commerce of the United States.

¶ CHARLES E. BROKAW '22, as head of a new incentive division in the Office of Domestic Commerce.

¶ C. GEORGE DANDROW '22, as vice-president of the Johns-Manville Sales Corporation.

¶ HARVEY L. WILLIAMS '22, as executive vice-president of the Chicago and Southern Air Lines, Inc.

¶ BENJAMIN K. HOUGH, Jr., '28, as assistant to the dean of the college of engineering at Cornell University.

¶ A. CARLETON JEALOUS '42, as executive vice-chairman of the Oak Ridge Forum Council.

Platform Pacers

¶ DAVID S. REYNOLDS '03, who spoke before the Plant Engineers' Club on the "Manufacture and Use of Illuminating Gas," at the Smith House in Cambridge on February 14.

¶ JAMES W. KIDDER '06, whose talk on "Postwar Radiotelephony" at Prichard Hall in Lynn, Mass., on February 5 was the fourth science lecture in a series presented by the American Institute of Electrical Engineers.

¶ WILLIAM A. SULLIVAN '17, Commodore, U.S.N., who addressed a meeting of the Propeller Club of Boston, on February 5 at the Boston Yacht Club.

¶ PETER L. BELLASCHI '26, who spoke before the instruments and measurements group of the American Institute of Electrical Engineers on "Surge Generators and Their Contribution to Electrical Engineering," at Northeastern University on February 26.

¶ CHARLES S. DRAPER '26, who spoke on "Jobs for the Gyro" before the Boston section, American Society of Mechanical Engineers, at Northeastern University on February 21.

¶ W. HART NICHOLS '27, who discussed "The Hand Miller from the Tool Engineer's Viewpoint" before the Boston chapter of the American

Society of Tool Engineers, on February 14 at Schrafft's Restaurant.

¶ HENRY G. LAMB '28, who addressed the Boston chapter of the American Society of Safety Engineers on "American Standards Codes," at the Engineers Club on February 28.

¶ PHILIP W. BOURNE '31, who presented the findings of the Federal Public Housing Authority on the acute housing problem, in an address before the Western Massachusetts Women's Club, at the Hotel Kimball in Springfield on February 12.

¶ IVAN A. GETTING '33, who spoke on "The SCR-584, an Antiaircraft Radar Set" before the Boston section of the Institute of Radio Engineers, on March 1 at the Institute of Geographical Exploration at Harvard University.

¶ BURNHAM KELLY '41, who gave an address at the Boston Public Library on February 3 on "The Immediate Future of Family Housing."

Pen Pushers

¶ CHARLES G. ABBOT '94, whose article, "The Sun Makes the Weather — I. Measuring Solar Variation," appeared in the *Scientific Monthly* for March.

¶ WILLIAM R. GREELEY '02, who wrote "Housing Solved" for the March *Journal of the American Institute of Architects*.

¶ VANNEVAR BUSH '16, whose tribute, "James Bryant Conant — President of the A.A.A.S. for 1946" was published in the March issue of *Scientific Monthly*.

¶ ALEXANDER J. BONE '24, who discussed "Research the Cornerstone of Highway Development" for *New England Construction* in February.

¶ J. WHITNEY PERRY '31, who is the author of a series of six papers, entitled "Chemical Russian, Self-taught," now appearing in the *Journal of Chemical Education*.

¶ PIERRE M. HONNELL '39, Lieutenant Colonel, S.C., U.S.A., who described, in the February issue of *Electrical Engineering*, "A Laboratory for Basic Electronics" which he has designed and installed at the Military Academy at West Point, N.Y.

DEATHS

* Mentioned in class notes.

¶ EDWARD F. STEVENS '83, February 28.*

¶ FRANZ H. SCHWARZ '87, March 17.

¶ WILLIAM L. DEARBORN '88, October 20.*

¶ CHARLES H. DEETZ '89, January 27.

¶ FRANK A. SMYTHE '89, November 8.*

¶ HERMAN W. TAMKIN '89, September 29.

¶ ERNEST H. BROWNELL '90, December 19.

¶ WILLIAM W. LOCKE '92, February 5.*

¶ WILLIAM H. WINKLEY '95, December 30.*

¶ CLARENCE W. PERLEY '96, February 3.*

¶ ROBERT G. HALL '97, November 24.*

¶ ALBERT E. SARGENT '98, February 5.

¶ FRANK F. FOWLE '99, January 23.*

¶ WILLIAM A. KINGMAN '99, February 20.

¶ PAUL A. BABCOCK '00, January 21.*

¶ EDWARD G. GALLAGHER '00, January 30.*

¶ JAMES P. SPRAGUE '00, February 5.

¶ ELLIS F. LAWRENCE '01, February 27.

¶ WILLIAM J. SAYWARD '01, December 21.*

¶ RALPH WHITMAN '01, February 3.*

¶ LOUIS W. ADAMS '03, November 20.

¶ WILLIAM D. MURRAY '04, February 4.

¶ ROBERT S. PHILLIPS '04, January 29.

¶ WILLIAM F. RECH '04, July 24.

¶ LOUIS R. CHADWICK '06, date unknown.

¶ WILLIAM L. WOODWARD '07, February 1.*

¶ KESTER BARR '11, November 25.*

¶ JOSEPH C. FULLER '11, date unknown.*

¶ GEORGE R. BARTLETT '13, December 5.*

¶ ADELBERT D. HILLER '14, February 19.*

¶ HERBERT W. KNIGHT '15, November 4, 1939.*

¶ DONALD H. WHITE '15, September 3, 1944.*

¶ HENRY W. HARMS '16, date unknown.

¶ CHARLES O. GIBBON '17, February 17.

¶ ROGER H. DAMON '22, January 25.

¶ KHYE H. OON '23, October 17.

¶ MORRIS SHULMAN '27, December 16.*

¶ WILLIAM F. RAMSAY '36, December 2.*

¶ WILLIAM G. HOLTON '41, November 25.

¶ RICHARD H. SEABURY '41, July 7.*

¶ KARAWEK SRIVICHARNA '41, in 1945.

¶ ROBERT C. KUNZ '42, June 19.

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Technology Club of Albany

The Club held its first meeting, since its organization was disrupted by the war effort, on February 7 at the University Club. We were fortunate in having with us Dr. J. S. Hall of the Radiation Laboratory to give a fine presentation of the development, uses, and possible future of radar. The presence of 21 Alumni encourages us and gives promise for the future activity of the Club. We welcome back from the armed services several of our members, including our Vice-president, G. Colburn Myrick. Our Secretary-Treasurer has also returned from New York City, where he was engaged in war work with the Bell Telephone Laboratories. The above officers and the President, Andrew F. Allen '12, were re-elected to lead the Club during this year. — GEORGE W. SCHAIBLE '30, *Secretary*, 158 State Street, Albany, N.Y.

M.I.T. Club of the Kanawha Valley

The embryonic alumni clan in Charleston, W.Va., met on February 12 at the Charleston Boat Club. This, the third meeting, was marked by the adoption of a constitution and the election of officers. Thus the M.I.T. Club of the Kanawha Valley came into formal being. The assembled Alumni elected for their first president Arthur H. Crowley '35 of E. I. du Pont de Nemours and Company, who unfortunately had been unable to attend the smoker because of illness. Eugene W. Hanszen '42 of the Carbide and Carbon Chemicals Corporation was chosen vice-president, and the post of secretary-treasurer was given to Daniel G. Hulet '42 also of Carbide. After the business meeting, the 33 Alumni sat back to enjoy the colored motion pictures of recent developments at Technology so kindly sent down by Charles E. Locke '96, Secretary of the Alumni Association. Ably handling the projector were Melville E. Hitchcock '37 and Howard P. McJunkin '43.

The arrangements for the meeting and the drafting of the constitution were the work of the five-man committee appointed last May to plan formal organization. This committee was headed by Dan B. Wicker '29 of the American Viscose Corporation. Assisting him were Roland D. Glenn '33 of the Carbide and Carbon Chemicals Corporation, Benjamin T. Woodruff '36 of E. I. du Pont de Nemours and Company, Edward T. Cook, Jr., '40 also of Du Pont, and Daniel G. Hulet '42 of Carbide.

Classes represented at the smoker ranged from '98, that of William Brewster or the Public Roads Commission of West Virginia, to 2-46, staunchly defended by Alexander S. Giltinan, a student on leave of absence from the Institute. The greatest representation was from '42, with eight present.

In addition to those already mentioned, the following Alumni were in attendance: Malcolm Anderson '42, Ernest F. Artz '42, Arthur W. Barry '37, Thomas W. Bartram '21, William S. Brackett '23, Northrop Brown '41, Roy M. Crawford '34, Francis G. Davidson '22, Holden M. Dougherty '22, Robert B. Egbert '40, Robert W. Gaines '39, Richard Gorman, Jr., '33, Raymond E. Hahn '43, Charles F. Hobson '11, Joseph C. Jefferds, Jr., '40, Paul J. Johnson '33, Ralph L. Kelly, Jr., '42, Robert W. King '42, Richard P. Little '42, Richard T. Merritt, Jr., '42, Irvin L. Murray '26, Carl S. Oldach '41, Arthur M. Rosenblatt '09, and John E. Spalding '31. — DANIEL G. HULETT '42, *Secretary*, 1595½ Quarrier Street, Charleston 1, W.Va.

The Technology Club of Chicago

The first dinner meeting of 1946 was held on February 4 at the Electric Club of Chicago on the 39th floor of the Civic Opera Building, and the attendance was very gratifying. One hundred and one Alumni and their guests came to enjoy the spirit of Technology associations and make new acquaintances. After the informal get-together and dinner, J. T. Rettaliata, director of the department of mechanical engineering at the Illinois Institute of Technology, presented an illustrated talk on jet propulsion. Dr. Rettaliata is considered one of the foremost research engineers in this field. His talk and his generous question-and-answer period were models for what a talk should be: an interesting subject made even more so by its presentation. Members and guests showed that they were well pleased by their many complimentary remarks at the close of the meeting.

Early in the evening, while spirits of all kinds were flowing, a surprise — what did we hear but the songs of M.I.T., sung and played at the piano as they can be sung and played only by Frank Gage '22. It was none other. He had just moved here. You will all recall that Frank was very active in Tech Shows and was the music composer of the latest Tech song, "Sons of M.I.T." Our President, Ed Farrand '21, announced that on April 8 we shall have the pleasure of a visit from Dr. Compton. His war duties have prevented his being with us for several years, and we have greatly missed him. It was noticeable that many men of recent classes came to this meeting, and the officers and members were happy to have such a fine turnout of those returning from the services. — ELMER D. SZANTAY '35, *Secretary*, Sandee Manufacturing Company, 3945 North Western Avenue, Chicago 18, Ill.

Detroit Technology Association

E. C. Balch, chief engineer of Michigan Bell Telephone, was the guest speaker at the Association's dinner meeting of February 19. Interestingly, Mr. Balch sketched the 70-year history of telephone communication. He described the inventions and

American ingenuity which have made it possible to roll back the barriers encountered by the engineers of this great public utility. The carbon microphone and Edison transmitter, the load coil and mechanical amplifier, and De Forest's three-element vacuum tube — all these, plus exhaustive laboratory and field experiments, made today's communication system an accepted reality at greatly reduced costs to consumer. Present-day experiments and trial installations of radio telephony, the coaxial cable carrying 480 messages, and the 8,000-cycle setup available for improved reception of wire radio offer broader visions for the future. Communication service designed to connect moving vehicles with carrier systems superimposed on power lines is on the way. Mr. Balch's enthusiasm in a limitless future, his easy delivery, and his great store of knowledge on this subject provided the gathered membership with one of the most interesting and instructive dinner meetings.

Attending members were as follows: F. N. Phelps '13, R. C. Doremus '14, T. K. Hine '16, C. T. Ellis '17, A. C. Litchfield '17, P. L. Hanson '21, James le Grand '21, H. H. Kaw '22, H. N. Landis '23, Franklin Fricker '25, D. B. Martin '25, A. E. Benson '26, J. E. Longyear '26, D. M. Sutter '26, C. B. Allen, Jr., '29, A. K. Stricker, Jr., '29, Chesley Ayers '34, W. F. Rahles '34, T. F. Morrow '35, A. H. Copeland, Jr., '38, P. T. Nims '40, R. J. Meier '41, W. L. Knauer '43. — THOMAS F. MORROW '35, *Secretary*, 16894 Birwood Avenue, Detroit 21, Mich.

Technology Club of Southern Texas

Technology Alumni in Houston have not met this year; consequently, there is nothing to report on that subject. A very interesting letter was recently received from Robert N. Gay '17, an Army colonel, in which he made modest mention of some of his experiences in the South Pacific in chemical warfare operations. He is now in Washington, D.C. H. Kenneth Franzheim '13 is the architect for a new building here, to cost around \$5,000,000 and to be occupied by a dry goods establishment. Everyone has been on the hop-skip-and-jump with reconversion and other problems. Your humble servant had a most enjoyable visit to Mexico City and other points of interest thereabouts for two months during the latter part of last year. — JOSEPH H. McEVoy, Jr., '21, *Secretary*, 202 McGowan Avenue, Houston 6, Texas.

Indiana Association of the M.I.T.

At the February meeting, Robert C. Wallace '27, Vice-president in charge of engineering for the Marmon-Herrington Company, gave a most interesting talk on the products developed by his company since its inception and the pioneering work done in creating new types of vehicles as well as in preparing military minds for the re-

quirements of motorized warfare. He illustrated his remarks by motion pictures which demonstrated forcefully the unusual and difficult problems confronting the design of automotive ordnance material.

The Association will miss Marshall D. McCuen '40, both in person and for his services as secretary-treasurer. The Association's best wishes go to Marshall as he takes up his new duties in Lansing, Mich.

The following Alumni were present: George P. Allen '16, John H. Babbitt '17, Frank C. Balke '14, Walter W. Bonns '99, John R. Diver '03, Arthur I. Franklin '98, Thomas G. Harvey '28, Samuel H. Hopper '33, Harry C. Karcher '25, Gustav W. Klumpp '30, Malcolm Mitchell '28, Howard S. Morse '03, Elliott G. Peabody '21, Arnold C. Rood '21, Vesper A. Schlenker '22, Robert C. Wallace '27, and J. Lloyd Wayne, 3d, '96. — JOHN H. BABBITT '17, *Secretary*, 3734 Carrollton Avenue, Indianapolis 5, Ind.

Technology Club of Southern California

The first meeting of the year was held on February 14 at the University Club of Los Angeles. Out of the approximately 950 members registered in this area, 50 Alumni attended. An election of officers was held, John B. Pitkin '37 being chosen for president and D. Donald Weir '38 for secretary-treasurer. A committee was appointed, with George M. Cunningham '27 as chairman, to organize and publish a directory of all Alumni in Southern California for those in this area to use in looking up old classmates, kindred professional graduates, and local Alumni who have professional services to offer. The speaker was Norman J. Padelford, Professor of International Relations at the Institute.

Professor Padelford addressed the meeting on "International Relations in a Technological Age." Of particular interest to the gathering were his observations on the international meetings he has attended. The Russians are a nation very interesting to the members of this Club, and Professor Padelford's discussion of their problems helped to rationalize what the newspapers commonly portray as eccentric behavior. He emphasized, furthermore, that much valuable spadework is done at each international meeting that is not reported in any detail in the daily press. He brought the Club up to date on the activities of the Institute and its plans for the immediate future. Statistics on the very large number of applications for admission to the Institute were most impressive. In accord with the spirit of the G.I. Bill of Rights, Technology is giving every preference to the returned veteran, to the near exclusion of nonveteran students. This extremely heavy veteran enrollment is expected to continue for two or three years before the Institute can return to normal. An interesting sidelight on the enrollment situation was revealed in Professor Padelford's remarks on the numbers of foreign students and the countries they represent. Predominant at present are students from China, Turkey, and the Latin-American countries, making international relations at Technology a vital issue.

R. V. Burns '23, direct from Ceylon, was one of those attending the meeting. He

told us a little of his work, which has to do with flood control, reclamation, and similar projects. His description of the age-old water-supply dams and channels in Ceylon made it clear that some of the old-time engineers were top-notch men. A reference to the heavy rainfall in Ceylon made the Southern Californians assembled glad that the local Chamber of Commerce keeps such rain away. Dr. Burns is on his way back to Ceylon via England, gathering all the latest news in his field as he goes. — D. DONALD WEIR '38, *Secretary*, 1492 North Doheny Drive, Hollywood 46, Calif.

Technology Club of New York

Most of us in this vicinity have just completed celebrating George Washington's birthday with a snow shovel in one hand and a pair of worn-out tire chains in the other. By the time you read this, however, I hope spring will be in the air, the robins making their appointed rounds, and the golf courses beginning to assume an alluring appearance. But to the ambitious Tech man, who will design and build a one-man, domestic snow-removing gadget, within the price range of the normal mongoose, we will give the civilian Bronze Star (better known as the officers' Good Conduct Medal).

Club interest is now at an all-time high, and we hope not only to maintain this tempo but consistently to raise it. Our membership is a little over the 400 mark, and by another two months, at the present rate of new members joining, we should turn the 500 corner. When that figure is reached, we hope to begin thinking of giving our members more advantages and in turn creating more interest among the 4,000-odd Technology Alumni in the Greater New York area. If you will bear with me for a bit of repetition, one service we could use admirably would be that of a few live-wire volunteers from each of the classes, to whip up class luncheons and dinners. Club facilities are still available for these affairs, and your Secretary would gladly be a paying guest at any of them on which he might be permitted to horn in. That's one way to get fresh news for this otherwise sordid monthly news letter.

The month of January has turned out to be our biggest in years for new members, of whom the following have been elected: Bissell Alderman '35, Harold F. Ballard '09, Harold I. Beadle '23, Hermon F. Bell '03, Richard H. Bolt, staff, James L. Bryant '31, Fred L. Cook '15, A. S. Dempewolf '28, Donald L. Dowling '20, Jim Eng '35, John H. Hanson '46, Roger L. Harriman '25, Jarvis M. Hazard '29, Harry J. Hemphill '26, Ralph H. Howes '03, Winfield H. James '40, Daniel S. Karp '40, Raymond D. MacCart '14, Merton S. Neill '34, Mirko V. Paneyko '29, Dale Pollack '36, Jay E. Ricks '30, Edward S. Rowell '33, Carroll H. Shaw '10, Saul M. Silverstein '21, Isidore Spector '11, Le Burton D. Webster '33, Hugh S. Wertz '31, John B. Wilbur '26. For the same period we regret to announce the loss by resignation of a few men, who, we hope, will return to this community and rejoin us, to wit: Lewis H. Johnson '09, Henry Manley '02, C. W. Meytrott '27, W. T. Spalding '10, and John J. Wilson '29.

A number of "visiting firemen" dropped in and hung their hats overnight at the

clubhouse, among them the following: R. T. Seabury '25, M. J. Scharff '09, N. J. Anton '31, Gray Jensvold '37, A. T. Ippen, staff, W. R. Franklin '26, J. G. Walker '06, D. W. Taylor '34, T. W. Lambe '44, E. D. McLeod '33, W. M. Murray '33, and R. H. Bolt, staff. While on the subject of out-of-town guests, I should like to pass along a tip in this regard. The demand for rooms is getting worse, not better, and it would be wise, if you plan coming to town and desire a room, to give the club two weeks' notice. The pressure for rooms has become so great that the Williams Club has asked that no more room requests be made for guests of our members who are not members of the Club. During the last few weeks, your Secretary has received at his office several communications from out-of-town-ers, desiring space reservations. I am glad to help any and all of you, but since I am out of town a good bit of the time myself, I would suggest that you address your needs direct to the Club and not to me. Time will be saved in that way, as your request will not lie around my office awaiting my return.

Although in the early stages at this writing, plans are under way for our spring outing and golf match. Several clubs are being considered, and definite announcements will be made later. For the golfers this event begins in the morning, including lunch and dinner. Bridge players begin when, as, and if, and the lucky ones usually make their carfare on the afternoon. These outings have become one of our most popular types of meeting, as they afford us all a better chance to get acquainted and exchange experiences. — WILLIAM W. QUARLES '24, *Secretary*, McGraw-Hill Publishing Company, 330 West 42d Street, New York 18, N.Y. WILLIAM L. KEP-LINGER, JR., '24, *Publicity Committee*, care of Johns-Manville Corporation, 22 East 40th Street, New York 16, N.Y.

M.I.T. Club of Northern New Jersey

How should you like your next house? Do you want it sunny side up, and with the yellow hard or runny? Do you want to be able to buy a bottle of special soap-bubble juice, poke in your pipe and blow up your dream house and move in? Or can you order a special Pandora's box from Montgomery Roebuck, open the lid, and have your special *Sans Souci* château pop out like a jack-in-the-box, though perhaps with all of Pandora's woes and a bushel of gremlins? What about all this prefabricated housing, anyway? That's why we had Professor Voss '32 at our February 26 meeting.

In the first part of the club year, when we were trying to find the subjects nearest the hearts of the Alumni in this neck of the woods, the answer came back as follows — "Prefabricated housing, radar, color photography, and jet propulsion." In January we had a wonderful turnout for the talk by Professor Soderberg '20 on the latter subject. We feel we were most fortunate in being able to obtain Professor Voss for prefabricated housing and Mr. Forrest on color photography. These meetings were at the Essex House in Newark and will be reported on in later editions of *The Review*. Press time always catches us napping.

March's meeting on color photography promises to keep up the high level of entertainment already established—more of this later. For the April meeting, Ivan Getting, Associate Professor of Electrical Engineering and a staff member of the Radiation Laboratory, will be down to talk about radar. He's going to tell us how the up-and-coming duck hunter of the next few years, with a minimum of expenditure (about half a million dollars), and a minimum of equipment (about ten tons), can assure himself that his puny popgun is pointed right where the duck is going to be when the shot gets there. No joking, Ivan's fire control equipment actually could follow the flight of sea gulls—not to mention Stukas and buzz bombs. So that's a real "must" for all in this area.

What with all the really progressive activity indicated by the past excellent lectures by Professors Soderberg and Voss and at this writing, the yet unheard talks on color photography and radar, don't get the idea that the Club is sitting back on its collective haunches merely listening to lectures. The officers of the Club have a project—a constitution, no less. Up to now, the Club has been a loosely knit organization which had a serious tendency to ravel because no one knew exactly what he was supposed to do except by tradition and the whim of the moment. A similarly disorganized human nervous system would belong to a dead man. So the brain (President Brooks '17) of this singularly active corpse proposes to tie together all the loose nerve ends and functions and give each their orders of the day. The constitution, at this writing, is in the tentative stage only but has been approved by all those whom we will smilingly call the brass hats of the Club. This proposed constitution will be circulated by mail to the active membership of the Club and will be voted on at the March meeting.

For the most part, this constitution proposes to put into writing the most up-to-date thinking on the general operating procedure which has grown up in the past 10 years. Nothing very radical is proposed. Some of the highlights are as follows: (1) As to the geography of membership, like Gaul—and there the similarity ends—New Jersey is divided. We get the northern end. The newly defined "Mason-Dixon" line includes the counties of Sussex, Bergen, Passaic, Warren, Morris, Essex, Union, Hunterdon, Somerset, Middlesex, Mercer, and Monmouth. (2) According to the procedure set up at the beginning of this year, the Alumni in the area will be divided into an "active" and an "inactive" group. The whole membership will be circulated at the beginning of the year giving the season's programs, and each member will be asked to note whether or not he wishes to receive monthly notices of the meetings. Those interested and paying the dues will be "active," and those not interested will be left as "inactive." (3) The biggest departure proposed is the payment of dues by "active" members. This would provide for the mailings and other incidental expenses, reduce the addition on the hotel's charges for each meeting, and so on.

Another project being considered is a directory of active members (approximately 500) giving as far as possible the correct name, with business and residence addresses

and telephone numbers. — FRANK O. PIERSON '29, *Secretary*, 15 Wyndhurst Drive, Madison, N.J. JOSEPH R. PERKINS '39, *Review Secretary*, 341 North Fullerton Avenue, Upper Montclair, N.J.

Technology Club of Manila

In order to tie together the activities of the Technology Club of the Philippines prior to the war and the activities of the present Club, it may be of interest to note that the last meeting of the old Club took place on August 13, 1941, at Bilibid Prison. Plans were made to hold a meeting sometime in November, but because of the uncertain conditions the meeting was never held. Last August, before the Japanese surrender, Dr. Compton and Dean Moreland '07 were in Manila on official business, and Technology men gathered to do them honor. This meeting served to stimulate interest in renewing the Manila club activities. The first meeting of the newly reorganized Club was held on November 21, and since that time considerable activity has taken place, and most of it has been recorded on these pages.

January was a lively month. The social meeting of January 6 has been previously reported. Since then a number of informal plant visits, as well as one formal business meeting, have been conducted. The business meeting was held on January 30 at the Sigma Chi House, Marvin H. Dixon '30, an Army colonel, presiding. After the business, Aubrey P. Ames '19 gave an informal talk on his experiences during 26 years in the Philippines, including three in a Japanese prison at Santo Tomas. Mr. Ames represents the Standard Vacuum Oil Company in the Philippines.

During his talk, Mr. Ames mentioned that the first Standard Oil representatives in the Philippines were British agents and that it was not until 1900 that the earliest American representatives had appeared. He further noted that all oil used by the islands comes from the United States or from the East Indies in the finished state, in spite of the fact that many unsuccessful attempts have been made to find oil wells and deposits in the archipelago. Before Pearl Harbor, oil shipments to the Philippines had been considerably curtailed, and after October, 1941, no further oil shipments were received. When the Japanese attacked in December, 1941, the oil tanks were almost empty, and what little oil remained was taken by the Army to Clark Field or was destroyed. During the war, the Japanese brought in all their own oil and made attempts to develop synthetic substitutes. When the United States Army returned, the oil tanks still there were strafed and bombed, and at the present time all Standard Oil property either has been completely destroyed or is being used by the Army. Mr. Ames also made reference to his life as a Japanese prisoner, and although his comments were limited, he gave the impression that hunger and boredom were among the paramount hardships he faced during his period of internment.

The next formal meeting is planned for February 22 and will be a Washington's Birthday party at the home of Mr. and Mrs. Ramon S. Sevilla '39. Before this meeting, however, a number of informal gatherings will take place from time to time at the

various points of interest in and around Manila.

Those attending the meeting at the Sigma Chi House are listed herewith: Aubrey P. Ames '19, Estanislao P. Angeles '32, Frank K. Bennett '44, William H. Bertolet '45, William J. Bright, 3d, '43, Burton A. Bromfield '44, Cesar H. Concio '40, Frank B. Connelly '46, Ciriaco I. Coronel '31, Marvin H. Dixon '30, Antonio C. Kayanan '42, Harold D. Kilgore, Jr., '40, Russell E. Lawton, Jr., '45, Franklin D. Mabbett '43, Manuel T. Manosa '21, David B. Mitchell '42, Jose E. Olivares '26, Donley J. Parr, Jr., '45, Jesus C. Perlas '40, Stanley M. Porosky '43, George H. Rabson '33, Albert C. Saer '43, Francisco D. Santana '32, Kenneth G. Scheid '45, Robert B. Smith '44, Richard E. Weaver '45, Philip S. Wilder '23. — STANLEY M. POROSKY '43, *Secretary*, Headquarters, Army Forces, Western Pacific, Office of the Chief Signal Officer, Signal Supply Division, A.P.O. 707, in care of Postmaster, San Francisco, Calif.

Technology Club of Philadelphia

Organization for the coming year is proceeding quite smoothly. President Anderson '15 has appointed our vice-presidents, George Logan '29 and Wendell Currier '31, as toastmasters of the May and October meetings. Andy also appointed our third vice-president, Ed Petze '28, chairman of a committee to formulate and arrange programs for the coming meetings. The other members of Petze's committee are Garland Fulton '17, O. Donn Burton '18, and William F. Ramsay '36. Osgood W. Holt '17 and Clarence W. Farr '33 were also appointed to take charge of the musical arrangements for the meetings. It has been suggested that those members of the Club who have any vocal ability get in touch with either Ozzie or Clare to form a nucleus in singing the Tech songs. Harry E. Knox '42 has resigned from his recently elected position as assistant treasurer of the Club as he is returning to the Institute in March for postgraduate work. Andy has appointed Burkhardt A. Kleinhofner '39 to take his place.

Edward J. Healy '23 has his placement planning and guidance committee functioning very smoothly. A meeting of the committee was held on February 14 at the Penn Athletic Club, and plans of action were formulated for various applicants. Several Alumni have already found positions in the area through the assistance of the committee. Since it is sometimes difficult to give a prospect leads for jobs that fit his experience, Ed requests that all Alumni in the Philadelphia area who know of openings available for qualified men, kindly inform him. This club activity should provide an opportunity of mutual benefit to new Alumni in the Philadelphia area and to various industries requiring Tech men of the right qualifications. The Club now has 263 paid members, compared with 184 for last year. The officers feel that this indicates not only an increase in interest in our activities but also approval of our membership directory. We hope that dues will be paid on time and early next fall so that the directory will be more complete.

The next dinner meeting will be held on the third Tuesday in May, the 21st, to be more specific. Mark the date on your cal-

endars. As final arrangements have not yet been made, the announcement of details will have to be made by mail directly to members. For information about Alumni in the Philadelphia area, call JEFFerson 0642. — ROBERT M. HARBECK '28, *Secretary*, Fidelity Machine Company, 3908 Frankford Avenue, Philadelphia 24, Pa. *Assistant Secretaries*: SAMUEL K. McCauley '41, 288 Copley Road, Upper Darby, Pa.; FRANK S. CHAPLIN '32, 822 Glendalough Road, Philadelphia 18, Pa.

M.I.T. Club of Western Pennsylvania

The second meeting of the Club for the year 1945-1946 was held on December 20 at 6:30 P.M. at the University Club. Three new members, D. C. Hooper '26, I. E. Madsen '33, and P. Y. Hu '17 were introduced; and Mr. Hu, who is in Pittsburgh as a technical representative of the Chinese Government, gave an interesting account of his experiences since graduation from the Institute. The Secretary read the minutes of the previous meeting, as well as the minutes of the meeting of the board of governors held on December 3. It was agreed to defer discussion of the proposal for the Club to underwrite a scholarship for high school students in the Pittsburgh area. At a later date the committee appointed by the board to study this proposal will present its report for further consideration of this subject.

Our President, T. W. Bossert '20, discussed the possibility of having Institute personnel, particularly President Compton, visit the Club, and stated that efforts would be continued to secure at least one representative of Technology this year. C. M. Boardman '25 then gave an informative report on the activities of the scholarship committee. The meeting was concluded with a talk by Francis C. Foote '16 on the subject, "Ramblings of an Army Medical Inspector." Mr. Foote had extensive experience during the war as a member of the Sanitary Corps of the Army Engineers. His remarks on the various problems of sanitation encountered in Army training camps in the South and how they were overcome were well received.

The meeting was attended by the following members: H. L. Bodwell '98, W. U. C. Baton '04, R. E. Zimmerman '11, H. H. Hall '14, F. C. Foote '16, P. Y. Hu '17, T. W. Bossert '20, E. M. Barnes '23, H. W. Dexter, Jr. '23, G. N. Reed '23, E. L. Chappell '24, M. L. Tressel '24, C. M. Boardman '25, F. W. Waterman, Jr. '25, M. M. Greer '26, D. C. Hooper '26, H. L. Johnson '32, I. E. Madsen '33, and S. C. Johnson '39.

On January 10 a luncheon meeting held at the Keystone Hotel was attended by 18 members of the Club, R. G. Lafean '19 having arranged for David O. Woodbury '21, editor of *Collier's* "Your Life Tomorrow," to speak. Mr. Woodbury spoke on his experiences during the war period on special assignments for the Navy, and his talk proved to be very enlightening and humorous. He is now engaged in the preparation of the war history of the Westinghouse Electric Corporation. On February 2 members of the Club and their wives attended a dance at the University Club, followed by a midnight supper. — HARRY

L. JOHNSON '32, *Secretary*, care of J. C. Morehead, 4815 Bayard Street, Pittsburgh, Pa.

Washington Society of the M.I.T.

Our February meeting at the Young Women's Christian Association on the 14th was especially inspiring for several reasons, one of them being the distinguished speaker we had, Major General Leslie R. Groves '17, of atomic bomb fame. You will see by the list of those present that we are still keeping up the attendance of more than a hundred that we have had for so long. It's a live bunch. Join us on second Thursdays at 6:15 at the Y.W.C.A. and see what goes on.

After supper General Groves was introduced by his old tennis partner, Captain Bill Mehaffey '17. The speaker went into the broader phases of the atomic problem but dealt lightly with the technical aspect of the subject. He said that the atomic bomb producing organization was a team composed of the following members: (1) theoretical chemists; (2) experimental physicists and chemists; (3) development engineer; (4) designing engineer; (5) construction and operational people; and (6) the military.

When someone asked what might reasonably happen to Washington in an atomic bomb blast, he stated that if the explosion were at the Capitol, the extent of the destruction would reach as far as the Cathedral. All the government buildings in that area would be rendered uninhabitable even though not entirely destroyed. Such a blast in a city of skyscrapers would blow out interior walls and petitions, though leaving outside walls, in many structures. General Groves feels that the protection against the atomic bomb is not a technical one, but rather a political protection. So far, such a program of protection is not in progress. The speaker's personal evaluation of Russian claims of atomic accomplishment is that it will take Russia about ten years to reach the point we have attained. In those years we have the opportunity to find the means to outlaw war and thus avoid complete destruction.

Present were: 1890: J. G. Crane, W. B. Poland; 1892: B. P. du Bois; 1893: G. W. Stose, P. H. Thomas; 1897: P. L. Dougherty, B. A. Howes; 1900: H. C. Morris, F. W. Southworth, C. H. Stratton; 1901: Charles Bittinger; 1902: G. E. Marsh; 1903: W. L. Cook; 1904: H. H. Groves, A. M. Holcombe, F. W. Milliken, G. C. Riddell, G. N. Whear; 1905: J. A. Furer, E. F. Kriegsman; 1906: J. G. Riley; 1907: J. P. Alvey; 1909: B. A. Robinson, M. R. Scharff; 1911: W. H. Martin; 1912: M. C. Mason, A. M. Pedersen; 1913: E. J. Therault, R. M. Wilson; 1915: A. D. Beidelman; 1916: W. H. Blank, F. P. Upton, W. E. Wentworth; 1917: W. C. Mehaffey; 1918: H. D. Manuclian, A. F. Murray; 1919: L. J. Grayson, E. M. Kenison, M. P. Smith; 1920: John Nolen, Jr.; 1921: L. W. Conant; 1922: G. P. Brookfield, H. H. Fisk, W. K. MacMahon, J. R. Morton, Jr., L. P. Tabor, J. H. Teeter; 1923: L. K. Downing; 1924: W. V. Cash, C. E. Herrstrom, J. E. Jackson, P. C. Maynard, W. D. Rowe, R. P. Schreiber; 1925: R. Ilsley, H. B. Swett, H. E. Weihmiller; 1926: S. J. Cole, T. L. Soo-Hoo; 1927: E. G. Cowen, D. F. Horton, G. E. Thomas; 1928: A. E.

Beitzell, J. W. Gaffney, M. W. Keyes, G. D. Mock, F. W. Turnbull; 1929: N. P. Stathis; 1930: J. R. Bloom, W. H. Martell, C. W. Maskell, J. A. Mathews, N. C. Nelson; 1938: P. R. des Jardins. — FRANK F. MILLIKEN '04, *Secretary*, 613 Greenwich Street, Falls Church, Va. ALBERT F. BIRD '30, *Review Secretary*, 5070 Temple Hills Road, Southeast, Washington 20, D.C.

M.I.T. Women's Association

On February 15 the Association met in the Emma Rogers Room for the usual delicious supper, followed by a brief business meeting with Mrs. Sage presiding. The principal subject for discussion was the financial status of the new residence for women students, not yet sound as might be. A suggestion had been made that the Association raise \$10,000 toward this end, and the authority was voted Mrs. Sage to appoint a committee to stage the campaign.

At 7:30 the meeting adjourned to the Dard Hunter Paper Museum, where the company was well entertained by a film on the progress of paper making, produced by the Kenwood Felt Company. The most interesting, historical portion had been supplied and supervised by Mr. Hunter. Opportunity was given for a leisurely examination of the contents of the museum with detailed explanation. Most interesting of all, perhaps, was a demonstration of the essential process of paper making by Mr. Hunter, who produced a piece before our very eyes, and that of printing by his son, Dard Hunter, Jr., recently back from the wars and now engaged in the peaceful pursuit of printing the Hunters' own book, to be hand set on handmade paper.

The 17 members present had a thoroughly good time and detained our kind hosts to a most unseemly hour. Those attending were as follows: Egilda DeAmicis '44, VII, Ruth Andrew Dean '29, IV, Katherine H. DeWolf '25, IV, Eloise Humez Evans '42, XVIII, Grace G. Farrell '29, VII, Mary E. Guinan '44, IV, Ruth M. Hale '26, XV, Mary McCusker Henry '26, VII, Alice M. Howe '42, IV, Theodora Keith '32, IX, Gladys P. Lyons '45, IV, Leona R. Norman '41, VII, Charlotte Simmonds Sage '13, IV, Florence W. Stiles '22, IV, Julia C. Sullivan '42, VII, Marjorie Quinlan Swift '41, V, Frances E. Wypler '39, IV. — RUTH ANDREW DEAN '29, *Secretary*, 11 Fuller Brook Road, Wellesley 81, Mass.

CLASS NOTES

1883

Another classmate has left us. Edward Fletcher Stevens, a special student in Architecture in our Class, died on February 28 of this year at the Newton-Wellesley Hospital at the age of 85. His work lives on in the form of more than 100 hospitals and other institutions designed by him in this country and abroad.

After continuing his architectural studies in Boston and New York offices, he formed his own firm of Kendall, Stevens and Taylor in Boston. In 1907, he went into private practice. In 1912, he joined Stevens and Lee and later the firm of Stevens, Curtin, Mason and Riley of Boston. During World War I,

he was a civilian specialist with the Army Engineers in the design of hospitals overseas and after the war was a member of a special committee named to revise Army hospitals.

In 1943, he retired to his home on Hawthorne Road, Wellesley Hills. He was the author of several articles on institutional architecture, including a book, *The American Hospital of the Twentieth Century*. Among the hospitals he designed were the Buffalo General Hospital, the Royal Victoria Hospital, the Providence Lying-In, the Ohio Valley General, and the Mixto and Maternidad Hospitals of Lima, Peru. He was a member of the American Institute of Architects, the Boston Society of Architects, and the University Club of Boston. He leaves his wife and a stepdaughter, Edna. — HORACE B. GALE '83, *Acting Secretary*, 10 Highland Street, Natick, Mass.

1888

We are in receipt of an engraved card which reads as follows: "The family of the late George W. Roper acknowledge with grateful appreciation your kind expression of sympathy. The pink roses were very lovely. We were most grateful for your thought of us. Mr. Roper had great love for his Class of '88 and for the M.I.T." In a personal note Mrs. Roper writes: "I was much touched by the beautiful roses from the Class of '88. Will you please pass the enclosed card on to its members? George had been ill for a very long time, but it was not until late August that we all knew there was very little chance of a recovery. It has been a very sad time for us all. George had greatly enjoyed all your letters and all the news of his Class and the M.I.T. I shall read your sketch of his life with much interest when it appears in The Review and hope that if you ever come to Norfolk again you will come to see me. I expect to be living here in the old home."

The following all-inclusive letter from James Otis Handy will be a treat for us all, telling as it does more than your Secretary, or anyone else, knew about him. Handy writes from Orlando, Fla.: "Thank you very much for your letter of January 12. May I ask the identity of the 'little bird' whom I must also thank for this friendly attention — probably our Alumni Office, passing along my November address change. I should like very much to visit your summer home in Maine sometime, but rarely travel farther in the summer than the Great Smoky Mountains in North Carolina. Apparently we are both interested in gardening. What do you raise? I have seen no more of Maine than the corner near Mount Washington in New Hampshire. Is the water on the Maine Coast as cold as reported, enabling only hardy athletes to bathe there? Our home has a frontage of 140 feet on Lake Holden, giving us a clear view over a mile of water, sky, and shores. Every summer I have received kind invitations to reunions of '88 men and have appreciated, if I have not always acknowledged, them. I am only a sort of half brother to the regular fellows, however, because I was a special student from 1884 to 1886, getting all the chemistry, metallurgy, and mining I could by attending classes with '88, '87, '86, and '85 men. You can see that I spread my time pretty thin and neglected cultivating the acquaintance of

my real classmates. Chemistry, chiefly, has provided my means of support, but metallurgy and mining have not been neglected. My instructor in metallurgy, Professor Robert H. Richards '68, died last year at the ripe age of 101. We had sent him greetings for his 100th birthday, and he then revealed that he had survived so well because he 'watched his diet.' He summered in New Hampshire.

"We have no snow here in Orlando but do now and then have white frosts and freezes which cut down some of our flowering things and make us shiver for a few days and nights if we wander far from the oil burner or the electric stoves and pads. It soon becomes springlike or even summerlike again. Even now we have sweet peas and garden peas and nasturtiums and hibiscus and bougainvillea blooming for us. We covered them in late November, when a killing frost destroyed most of our poinsettias and some of my papayas. I have not met many Technology men. William P. Flint '90, an old Pittsburgh friend, has come to St. Petersburg, Fla., for this winter from his home in Coudersport, Pa. There were many M.I.T. men in Pittsburgh and in New York, where I lived from 1929 to 1935 before coming down here. I belong to the University Club of Winter Park and some three years ago met there the son of the late President Walker of Technology. My work here is, as you know, chiefly for the citrus industry but is broadening to include the vegetable field. The treatment of tomatoes before marketing has had some attention. Nearly all fruits and vegetables retain their good appearance and flavor longer if they receive a thin film of a wax preparation. Even the humble white potato is benefited, and pecan nuts in the shell keep fresh longer.

"My study at Technology and afterward has led to services to various persons in various places. For example, knowledge gained at M.I.T. of the Massachusetts board of health's sand filtration for purification of the water at Lawrence, Mass., led me to advocate the same method very vigorously in Pittsburgh and finally to aid materially in bringing it about, thus eliminating water-borne typhoid and other diseases forever there. I organized the chemists in the Pittsburgh area in 1891. Knowledge of prospecting and of mineral recognition learned at the Institute made possible many interesting and profitable excursions for the Pittsburgh Testing Laboratory to Canada, South America, and the western United States. In Cobalt, Canada, I found the Violet silver mine, which paid my friends quite well. In metallurgy I served the copper smelters, who were sued for an alleged Carson patent infringement (20 million dollars claimed). They were at first freed of the charge. We showed that Sir Frederick Siemens in 1860 had patented the idea. Later the Court of Appeals reversed us, but we were right. Anyway, we saved them 90 per cent of the amount sued for. Please tell me about your activities between 1888 and 1946, aside from your efficient secretaryship for the Class."

William L. Dearborn passed away on October 20 at his home in Sandwich, Mass. Billy was in the School of Mechanic Arts during 1884-1885 and with us from 1885 to 1887. We all remember him as the best all-round athlete during the three years that he

was a regular '88 man. He did everything well and had a remarkable muscular development. He left us in May, 1887, to become an assistant engineer on the Boston and Maine Railroad for four years. In 1889, he was resident engineer during the construction of the new Salmon Falls steel bridge on the western division of the B. & M., and in 1890 was at St. Johnsbury, Vt. For the next three years he was with the Chicago office of Yale and Towne Manufacturing Company. In 1894, he went to New Orleans and formed the firm of Bowles and Dearborn, building steel bridges for the Gulf and Ship Island Railroad, including a wharf extending for three-quarters of a mile into the Gulf of Mexico. In 1901, he was contracting engineer for the American Bridge Company in New Orleans. He was supervising engineer during the construction of the largest sugar manufacturing plant in the Republic of Mexico and operated the plant during its first year after completion. From 1910 to 1916, he supervised the construction of docks and piers in Havana, Cuba, for the Port of Havana Docks Company. From 1916 to 1918, he was general manager of the Cuban Sugar Mills Corporation in the province of Pinar del Río, Cuba. In 1918-1919, he was resident engineer of the United States Shipping Board Emergency Fleet Corporation at Norfolk, Va. He belonged to the Havana Country Club, the Havana Yacht Club, the Midway Club, the Havana and St. Anthony and Technology clubs of New York, the American Society of Mechanical Engineers, and the American Society of Terminal Engineers. Dearborn was one of the most outstanding and active members of the Class.

Your Secretary now plans to return to his summer home and permanent legal residence on Chebeague Island, Maine, about May 1 and start his big vegetable garden as soon as the ground is dry. Sweet corn, tomatoes, and cucumbers are his principal crops, with about a dozen other minor varieties. — BERTRAND R. T. COLLINS, *Secretary*, 76 Murray Place, Princeton, N.J. SANFORD E. THOMPSON, *Assistant Secretary*, The Thompson and Lichtner Company, Inc., Park Square Building, Boston 15, Mass.

1889

Welles Bosworth, the architect of the group of M.I.T. buildings, has recently received notice from the "perpetual secretary" of the Académie des Beaux Arts of the French Institute in Paris, that he has been elected "by overwhelming majority" as full member, with the title "*membre de l'Institut*." For many years he has been a "*membre correspondant*," but as the regulations admit only two foreign architects as full members, and there were no vacancies, he has been kept waiting until one occurred, according to the historic custom in the French Institute. The passing on of the late Whitney Warren of Louvain Library fame, left this empty chair. The other foreign architect full member is Arthur Brown, Jr., of San Francisco. Bosworth is especially known to the French for his work as general secretary of the Franco-American committee for the restoration of the monuments of Versailles, Fontainebleau, and Rheims, under the Rockefeller donation, which has kept him occupied in France for most of his time since 1925. He has been president of

the University Club of Paris for eight years, from its organization to the outbreak of the war, and very active in all the works bearing on Franco-American friendship. When he exhibited his plans and photographs of our M.I.T. group of buildings at the Paris Salon in 1918, he was given the Legion of Honor as "*chevalier*," and has since risen to the unusual grade, for a foreigner, of "*commandeur*." But this honor of "*membre de l'Institut*" is, to an "*ancien élève de l'Ecole des Beaux Arts*," the crowning title of professional achievement. Unless we are mistaken, it was first given to Richard M. Hunt, whose monument stands on Fifth Avenue, New York, opposite the Frick Museum, where his chef-d'oeuvre, the Lenox Library, then stood, before the building of the Public Library, with which it was merged. The Secretary regrets to publish this story of Bosworth's honor without a photograph of him wearing the feathered hat, the palm-leaf embroideries on his long-tailed coat lapels, and the sword which he will now be expected to wear at séances "*sous la coupole*."

The memory of Albert Sauveur was honored on January 4 at the Hotel Sheraton by the Boston chapter of the American Society for Metals. — The Secretary has received word, but without particulars, of the death of Frank Smythe at Elyria, Ohio, on last November 8, after an illness of about two weeks. — Parker Fiske has transferred his business, owing to its phenomenal growth, to a corporation called "Fiske, Inc." with factory and general offices at 100 Felton Street, Waltham 54, Mass. Parker remains as president and treasurer of the new corporation. — Mrs. Roland N. Cutter has kindly sent to the Secretary a number of pamphlets and programs relating to the Class, some of which, such as the program of the graduation exercises, are veritable collector's items. If any classmate would care to have them, they are at his disposal. — WALTER H. KILHAM, *Secretary*, 126 Newbury Street, Boston 16, Mass.

1891 •

In the February Review we gave tentative dates for our 55th reunion but later discovered the conflict with the Alumni Banquet; our tentative dates are now June 14 to 16. By the time you read this, we should have all the details, and you should have the program. So put this on your calendar as the big event for 1946 — our victory reunion.

Since we haven't much in the way of news, here is some ancient history. The National Fire Protection Association is celebrating its 50th anniversary this year. Several of our men were active in this organization in its early years as well as later, including Gorham Dana, F. Campbell Moore, George Spooner, and the writer, who has been closely identified with its activities over practically the entire 50 years. The association now has over ten thousand members, including many in foreign countries. Its head office is in Boston. The following appeared in its February *News Letter*: "The January, 1946, Quarterly mailed to members last month appears with a new cover design recommended by the N.F.P.A. Committee on Public Relations. The new cover format replaces the one which has been used without change for nearly 40 years. This original design,

prepared by member Henry A. Fiske, first editor of the Quarterly, was distinctive and has been identified with the magazine in the minds of all our members. It is a tribute to the work of the original editor that his design was continued in use without change for such a long period."

Frank Howard reports another great grandchild, a girl, Joan Carol Wheeler, born on his birthday, December 22, at home in Cambridge and doing well. Speaking of birthdays, many of us still miss the birthday greetings that Barney Capen used to send out, not only to many in our Class, but also in some cases to wives and children. The coeds were included, resulting in interesting personal letters from some of these ladies. Barney could not do much letter writing in his later years, but the voluminous correspondence resulting from his birthday remembrances made our Review class notes second to none in volume and interest. Charlie Garrison and George Hooper, who lived in California, used to send him accounts of their trips or affairs, sometimes to the extent of 12 to 15 handwritten pages. Barney played an important part in fostering our personal interest in one another, and this we shall never forget.

Gorham Dana and his Brookline planning board continue their activities, and the following headlines appeared in the Brookline *Citizen* of December 27: "Projects which would lift Brookline Village's face, loosen jammed traffic, and create a new town administration headquarters are contained in the annual report of the Brookline planning board released today by Gorham Dana, chairman of the board."

The sympathy of the Class is extended to George Spooner, whose wife passed on recently. — HENRY A. FISKE, *Secretary*, Grinnell Company, Inc., 260 West Exchange Street, Providence, R.I.

1892

The sad news has been received of the death of William W. Locke from a heart attack on February 5 at his home in Framingham, Mass. He was born in Lockeford, Calif., on November 19, 1865, the son of Dr. Dean J. Locke, who went out as physician of the Newton Company in 1849. He was graduated from the San José State College in 1885. He entered the Institute in the fall of 1888 and was graduated in 1892 with an S.B. degree in Sanitary Engineering as a member of the first class to complete that course. Immediately after graduation he received an appointment as assistant engineer of the Massachusetts state board of public health, serving in this capacity until 1895. In 1895, he received the appointment of sanitary engineer in the health department of Brooklyn, N.Y., serving until 1898, when he was appointed sanitary engineer for the Metropolitan District Commission of Massachusetts, in which capacity he served for more than 37 years until he retired in 1935. He was a resident of Framingham for 48 years, serving on several town committees and at one time as park commissioner. He is survived by his wife, Mrs. Etta M. (Ober) Locke, a daughter, Mrs. Helen L. Smith of Rochester, N.Y., and two sons, William W., Jr., of Worcester, and Walter O. of San Diego, Calif.; also by two brothers, Edwin M. and George, and two sisters, Mrs. Hannah L. Demangeot and Mrs. Theresa L. Thorpe.

Locke always took an active interest in class affairs, attending with regularity all the class reunions since the 25th. Many of his classmates will remember him as an enthusiastic ballplayer on the '92 team, of which he was captain in the sophomore year, and on which he always played, either as pitcher or at second base. We also remember him in his later years as an enthusiastic bowler, as some of us played a string or two with him at each of the reunions mentioned. He was actively affiliated with the Grace Congregational Church of Framingham, where he sang as a member of the choir until last December.

A few of our members gathered around the '92 table at the banquet at the Statler on February 23. Present were H. J. Carlson, E. C. Hall, G. H. Ingraham, A. J. Ober, and A. P. Marsh. The Secretary was extremely disappointed to be unable to attend on account of an attack of influenza. — CHARLES E. FULLER, *Secretary*, Box 144, Wellesley 81, Mass.

1895

It is a great privilege for the Alumni of the older classes to be able to attend the annual banquet meetings of our Alumni Association. If your digestive organs are still functioning, you can fully enjoy the excellent food provided; and if you are mentally at rest, the convivial spirit tends to broaden the smile on your face. Although there is unquestioned evidence of a waning of the physical stature of the oldsters, there appears to be no dearth in the fellowship, distinctly peculiar to Tech men. In fact, as the older boys advance in years, the importance of their class numeral wanes, and their affections and affiliations merge in a desire to be classed as one of the alumni Old Guard. Those of the Alumni who have attained or passed their 50th graduation anniversary can well qualify for membership in the alumni Old Guard. Your Secretary experienced this impression while attending the last of the winter banquets, on February 23, where four of the Class of 1895 were gathered: Eugene H. Clapp, Samuel P. Hunt, William S. Rhodes, and Luther K. Yoder. We were fortunate to be seated at the '94-'95 table, in company with four good scouts of the Class of 1894: W. V. Batson, N. S. Bean, Alan A. Claffin, and W. H. Pratt.

Gerard H. Matthes has finally secured a permanent address in New York City. You will find him at the Broadway Central Hotel, Suite 518, New York 12, N.Y. Louis A. Abbot is now located at 24 Fullerton Street, Boothbay Harbor, Maine. Joseph E. Walworth has taken up residence at Lakeside Inn, Mount Dora, Fla. We understand that Eddie and Mrs. Alden are again wandering in the South, and we shall be interested to learn their experiences in the frightfully congested areas of many of the southern states.

Henry D. Jackson, our old friend, has been affiliated for years with the classes of both 1895 and 1896. This year he has the unique distinction of again celebrating his 50th graduation anniversary. Henry was on hand at the banquet felicitating his '96 cronies, and we commend him for his great loyalty to the Institute and his good will for both 1895 and 1896. As these notes are ready for press, your Secretary learned with great regret of the passing of William H.

Winkley. Details, when available, will be reported in a future issue. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

1896

Right off are three reminders to the Class! The first is of the meeting of the New York group scheduled for Wednesday, April 17, at 6:30 p.m., in the President Tavern, 364 Lexington Avenue. The next is the reminder of the reunion planned for East Bay Lodge in Osterville on Thursday, June 6, and Friday, June 7, with the grand windup in the observance of Alumni Day at M.I.T. on Saturday, June 8. Finally, and perhaps most important, is that classmates keep strongly in mind that the opening of the new Alumni Fund year begins on April 1, and that it is the hope and expectation that the Class will make a most significant contribution in its 50th year. Here again everyone can at least make a token contribution, and those who have resources dig quite a bit deeper in our 50th year than they have in years previous, so that we will make a record in number of contributors and amount contributed.

Tabulations of attendance at the various events around the week end of February 23 are as follows: At the Class Day exercises in Walker Memorial on the afternoon of Saturday, February 23, Arthur Baldwin took part as speaker for the 50-year Class, and your Secretary played a minor role as alumni secretary in transferring the class banner to the president of the graduating class. Damon, Jacobs, Robinson, Rockwell, and possibly others, were in the audience. No record was made of any classmates who may have attended the baccalaureate exercises on Sunday afternoon. At the Alumni Banquet in the Hotel Statler on the evening of Saturday, February 23, eighteen attended, as follows: Butler Ames, Arthur Baldwin, Fred Damon, Bob Davis, Bill Dorrance, Jim Driscoll, Henry Grush, Henry Hedge, Frank Hersey, Perry Howard, Sam Hunt, Henry Jackson, Elbridge Jacobs, Charles Locke, Elmer Robinson, John Rockwell, Fred Rundlet, and Herbert Smith. At the graduation exercises in Symphony Hall on Monday, February 25, the 50-year Class marching in the academic procession included all those who attended the Alumni Banquet on Saturday, with the exception of Hersey, Hunt, and Jackson, and also four additional in the persons of Hermann Lythgoe, Eddie Mansfield, Miss Stone, and Charlie Tucker. At Dr. Compton's luncheon, which followed the graduation exercises, all of those who attended the graduation exercises were present, plus Le Baron Russell, and also Mesdames Davis, Dorrance, Driscoll, Lythgoe, Mansfield, Rockwell, and Tucker.

Final records show that only one member of our Class, William E. Haseltine, took part in World War II. He was on duty in Washington. Incidentally, Colonel Haseltine had finished his work in Washington, and a card from him indicated that he was in Long Beach, Calif., and the assumption is that he and Mrs. Haseltine are now indulging in their deferred tour to the West and Latin America. Rear Admiral Hamlet and Billy Clifford both tried hard to get back into active service, but without success. Clifford however, did fight the war at

home in Loudoun County, Va., as director of Civilian Defense, and also as chairman of the Loudoun County chapter of the Red Cross. He also had two boys in the conflict, one a regular Navy man who is now a commander, and the other, William, Jr., who entered the Army as an enlisted man with the New York National Guard and was ultimately discharged as captain of Engineers. Hamlet did his bit in the civilian job of chief air raid warden of Montgomery County, Va.

Additional sojourners in Florida have been located — George Harkness at Lake Worth and Billy Clifford at Delray Beach. Myron Fuller was continuing on at Fort Myers through the winter, but planned to come back to Massachusetts in the spring. Dan Bates was headed for a vacation trip to Florida the last of February. The Toziers have decided to continue in Florida until April 1, when the probability was that they would start roaming again. Hattie Gates wrote that she was at Altamonte Springs, enjoying that beautiful lake region of central Florida. She ended her letter with a little couplet — "In the land of sunshine, where there is no snow, / And the brilliant sunsets brightly gleam and glow." Walter Stearns did not get so far as Florida this year. He and Mrs. Stearns left Schenectady the day after Thanksgiving by motor, spent a week in Fort Monroe, Va., and six weeks in Raleigh, and arrived in Pinehurst, N.C., where they planned to stay until March 15, and then go back to Raleigh until it comes time to head north to Schenectady again the last of April. Walter was not entirely happy over the fact that the weather had been bad in Raleigh and in Pinehurst, with lots of rain and considerable coolness, so that at the time he wrote at the end of January he sadly said that he had played golf only twice since arriving in Pinehurst.

Sjostrom wrote from his home in Methuen, Mass., that he regretted his inability to be with us at the graduation events in February, but he was recovering from a serious major operation, so that he was following the doctor's orders and taking it easy for a while but was hoping to be with us in June.

Harold Boardman attended the 50-year celebration of his class at the University of Maine last June, when the commencement exercises included the presentation of an oil portrait of himself by the Alumni to the university, so that it now hangs in that institution with the rest of the former presidents.

Karl Pauly has followed geology as his hobby since retiring from the General Electric Company, and he has recently sent the Secretary a paper containing his speculations on the causes of the great ice ages, which has been read with much interest and is ample evidence that Pauly's brain is still functioning most actively.

Professor E. C. Jacobs was in New York on the week of February 18 and gave a talk at the American Museum on February 20. He arrived in Boston in time to take part in the various events of the Class in connection with graduation, and the Secretary had the pleasure of having him as his guest over that week end.

Classmates will be very sorry to learn that Father Partridge has been obliged to abandon his southern mission trip until

next year. He started out, but shortly after leaving New York he was struck down with a serious attack of internal poisoning, which resulted in his being put into the Episcopal Hospital in Philadelphia for a while. From there he was being transferred, at the time he wrote on February 17, to the convalescent home connected with the hospital. He gave a change of address, requesting that all communications be sent to him in care of his daughter, Mrs. Dorothy Ellsworth, 136 East 22d Street, New York, N.Y.

A long and characteristic letter has been received from Con Young in Florida. Con's letters are so enjoyable that the secretaries feel they should be shared with classmates, and therefore it is their hope that in some month this spring when other news items are scarce they may submit Con's letter in full.

Classmates will be sorry to learn of the passing on February 3 of Clarence Perley, whose long illness has been reported earlier. He was graduated with us in Biology, and had followed library work as a career, occupying positions in Boston, Chicago, and Washington. He had retired from the Library of Congress in 1937 but was retained as honorary consultant in classification. He was born on February 16, 1867, and married Alice West in Chicago on May 10, 1905. There was one child, Alberta, born August 27, 1908, who married John Prescott. — CHARLES E. LOCKE, *Secretary*, Room 8-109, M.I.T., Cambridge 39, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge 38, Mass.

1897

In announcing the death of Robert G. Hall, V, we are privileged to use the following appreciation by Worthen Bradley, which appeared in the *Mining Journal* for January 15: "Robert George Hall, metallurgist of the Bradley Mining Company, was killed at the wheel of his car on November 24. . . . The highway collision which took Hall's life occurred on a wet evening near Hollister, California, as he was returning from a visit to the El Segundo antimony plant of the Harshaw Chemical Company. Mrs. Hall, who was also in the car, was seriously injured, but is recovering.

"Hall was born in Hilltown, County Down, Ireland, on February 6, 1871. He entered the United States at the age of 18 and worked for a few years in Pittsburgh, accumulating funds for a college education. In 1893 he enrolled in . . . Technology and, under the direction of Dr. Robert H. Richards ['68] and others, studied chemistry and mining which became the basis of the metallurgical course. Upon graduation in 1897 Hall went to Colorado, where he worked as a chemist with the Pueblo Smelting and Refining Company. Then followed experience in the metallurgy of gold in the San Juan and Cripple Creek fields, during the period marked by the displacement of chlorination by cyaniding. Hall's responsibilities included the management of properties, those of the American Gold Mining Company . . . , and others. In 1905 he became assistant superintendent, and later general manager, of the United Zinc and Chemical Company, in Kansas and at Leadville, Colorado. Hall installed the second retort in the United States for treating high-

iron zinc ores (the first had been put in by the U. S. Zinc Company, and was modeled after Belgian practice). Hall also built for United Zinc a smelter at Springfield, Illinois. From 1913 on, Hall worked out of St. Louis for the American Smelting and Refining Company. For that organization he operated plants in Keokuk, Iowa, and Florence, Colorado, and he continued research on complex western ores and the production of electrolytic zinc.

"In 1918, Hall was appointed to one of the premier positions of his profession: resident manager for Burma Corporation, Ltd., at its famous Bawdin Mine. Hall and his staff developed a successful metallurgical process, making lead-silver and zinc concentrates from complex low-grade ores, and smelting the former concentrate with the high-grade ore. Hall returned to this country in 1921 and settled in San Francisco, where he subsequently worked under D. C. Jackling on a zinc smelter near Redding, California. During the middle twenties Hall departed from his profession to engage in home and apartment construction in San Francisco. Returning to the mining field in 1927, he became associated as metallurgical consultant with F. W. and P. R. Bradley on work for their Alaska Juneau and Atolia enterprises. He continued in that capacity for the Bradley Mining Company, and in recent years specialized in laboratory and office research on tungsten, antimony and quicksilver.

"Hall had been a member of the A.I.M.E. since 1914 and delivered several technical papers before Institute meetings, including a notable paper on gold before the regional meeting in San Francisco in 1939. In 1944 he co-authored a paper (published in *Metals Technology* of December, 1945) on the Sulphur Bank and Reed Mine quicksilver plants. R. G. Hall became intensely preoccupied with any task he undertook and was never content with any result short of his best. In spite of this serious aspect of his nature, he always had time for geniality and thoughtfulness toward his associates. Hall's valuable work will be missed, but more than that it will be remembered that he had personality and integrity to match his learning and ability." Looking back nearly 50 years, we can see Hall as he worked with us in the laboratory or sat with us in the classroom. Serious he could be when occasion required, but as Mr. Bradley writes "he always had time for geniality," and his laughing eyes, characteristic of the land of his birth, endeared him to all his classmates.

Six members of 1897, H. E. Worcester, J. R. Daniell, C. H. Eames, C. R. Currier, C. B. Breed, and your Secretary represented the Class at the Alumni Banquet at the Hotel Statler in Boston on February 23. It is planned to get as many as possible of the men in and around Boston together for the proper observance of the 50th anniversary of our graduation, which occurs in 1947. If any of you have ideas on this subject, please send them at once to the Secretary. —JOHN A. COLLINS, JR., Secretary, 20 Quincy Street, Lawrence, Mass.

1899

From the ever-faithful Alumni Secretary, Charles E Locke '96 (What should we class secretaries do without him?) comes the announcement that June 8 has been selected as

Alumni Day at Technology. This occasion will follow the lines of the old pre-war alumni gatherings with a symposium in the forenoon, open-air luncheon at noon (written with the temperature outside at zero), social affairs in the afternoon, and the Alumni Banquet at the Statler in the evening. A special program will be arranged for the ladies. What is your pleasure, gentlemen? We couldn't have a five-year reunion in 1944. Last year conditions were against us. Let us have a victory reunion in 1946. Some of us may be among the missing if we wait until our 50th in 1949.

Art Hamilton of Sugar Hill and Henry Eaton of Peterborough, N.H., both sent clippings recording the death of Frank F. Fowle, who was a native of Hancock, N.H. Frank, who was head of the Frank Fowle Company, consulting engineers, of Chicago, died at his home in Winnetka, Ill., on January 23. He is survived by two sons, Frank, Jr., and William, both of whom were officers in the Navy in World War II. He also left five grandchildren. Mrs. Fowle died about two years ago. Details as to the cause of his death are not available. Those of you who attended the last five-year reunion in 1939 at the Essex County Country Club will remember that Frank made an extra effort in order to be there.

Above I intimated that Henry Eaton, formerly with the Waltham Watch Company, was located in Peterborough, N.H. That is correct as a winter address, but in April he goes back to his 250-acre farm in Temple, N.H. In March he will help George Priest with his maple syrup harvest in Brattleboro, Vt. Remember George's address, fellows, if you want some honest-to-goodness genuine maple syrup. Your Secretary sent for some last spring and found it delectable.

Clancey M. Lewis has written me on the letterhead of the Washington State Seniors Golf Association of which he is secretary. The association office is in Seattle, but Clancey's address is Route 2, Box 412, Renton, Wash. Clancey was particularly interested in the obituary of Sylvester Cannon in the January notes since Sylvester was his course- and thesis-mate. They also met in Liège on Clancey's way to China in November, 1899, and later Sylvester worked with him and Kimball on a gold ore from Lewis' brother's gold mine near Hailey, Idaho. Later, Clancey Lewis became manager of the Manufacturers' Association of Washington and in this work had contacts with Sylvester's brother, Willard.

Arthur L. Hamilton was married on October 9 to Eleanor Shane. Ham resides in Sugar Hill, N.H., and is still active in the New Hampshire legislature as representative from his district. He writes: "A friend of mine, Sherman Adams, former speaker of the New Hampshire House and at present congressman from our district, is a candidate for governor of New Hampshire at this coming primary. So I suppose I'll have to be a candidate for the House again despite the fact that I have served for five consecutive sessions." Ham has also recently completed a job as chairman of a Grafton County drive for the New Hampshire war chest. Grafton is rural with a scattered population. Yet the quota of \$31,257 was exceeded by \$5,000, putting Grafton at the head of the list of New Hampshire counties. His oldest son, Parker

Hamilton, having lately joined the staff of the department of mathematics at M.I.T., affords Ham a ready excuse for an occasional trip to Boston. His other son, Dick (Arthur, Jr.), is adjutant to his Corps, stationed at Holabird Signal Depot near Baltimore. —BURT R. RICKARDS, Secretary, 381 State Street, Albany, N.Y. ARTHUR H. BROWN, Assistant Secretary, 53 State Street, Boston 9, Mass.

1900

Our never failing correspondent, Jim Batcheller, writes in as follows: "I am not superstitious, but I don't believe in taking any chances! Wherefore, as I write this, I have crossed my fingers and knocked on wood — because if I continue for another three months the improvement I have gradually made during the past four and one-half years, I believe I shall be able to make the trip back to Boston by mid-May, for a few weeks' visit, before driving back out here with my good car, which one of my sons has needed during his war work. My 'Old Faithful' out here has rolled off 110,500 plus miles, and though still going strong, ought to be 'turned out to pasture' for a well-earned rest! When my friends show an inclination to smile at this idea, I caution them, 'Better not — you may be old and weak yourself sometime!' But none of the above is my real reason for this letter. I want to take advantage of being in the East to say hello to as many of my old friends as I can; hence I plan on dropping in to see you. Will there be an Alumni Dinner and other doings at Technology in early June, where I shall be able to see some more classmates? I should appreciate it if you would send me the dates and other details as soon as convenient so that I may plan my itinerary accordingly. I hope you have kept well and will continue so."

Mrs. Gallagher sent in the following notice which appeared in the *Hampshire Gazette* of Northampton: "Edward G. Gallagher, 73, of 75 Pine Street, Florence, who was associated with Simon Lake in the pioneering of the submarine, died at the Dickinson hospital [on January 30]. He was born in Medway, Mass., son of Mr. and Mrs. Edward Gallagher, on Oct. 9, 1872. He spent his childhood in Wellesley, where he was graduated from the high school of that community. He was graduated from M.I.T. in 1900. A few years following he became associated with the Lake Torpedo Boat company of Bridgeport, Conn. He worked with Simon Lake in the building and developing of submarines abroad and in the United States and was engaged as an electrical engineer in the pioneering movement. During the period of years he was engaged in this work, he spent five years in Russia and two in Berlin and on the continent. Mr. Gallagher developed a device for sub torpedo firing, and it is this device which is used today by the U. S. Navy. He also supervised the construction of the sub used by Sir Hubert Wilkins for his polar exploration. He was a life member of the M.I.T. Alumni Association. In 1925 he married the former Margaret Richardson of Wellesley Hills, and the couple came to Northampton to make their home in Florence in the fall of 1937. Besides his wife, who is at present on the staff of the Smith college library, he leaves one brother, Peter of Framingham, and two sisters, Mrs.

Martin McNailey of Framingham Center and Mrs. Mary English of Brighton.

The Boston *Globe* carried the following notice: "... Paul A. Babcock, 67, well known nurseryman ... died [on January 21] at the Quincy Hospital following a ten months' illness. ... A descendant of one of Milton's oldest families that came to Milton to settle in 1630, Mr. Babcock attended the local schools and was graduated from ... Technology. ... For a number of years he worked as an engineer for the Libby Owens Sheet Glass Company, Toledo, O. and for many years was connected with Lockwood Greene Company, a Boston engineering firm. His last engineering assignment was in 1941 when he engaged in constructing a war plant in Waltham. For the last few years he had been proprietor of the Babcock Nursery. He is survived by his wife, Mrs. Edith (Meade) Babcock, a daughter, Rosamond M. of Milton, two sons, Paul A. Jr. of Wollaston and Milton M. of Milton, and a brother, Josiah Babcock, present Selectman of the town of Milton and Representative in the Massachusetts Legislature, and five grandchildren."

George Gibbs writes in from 32 South Main Street, Caribou, Maine. — At the Alumni Banquet in February, the class table was well filled. The following were present: Allen, Conant, Fitch, Jackson, Neall, Richardson, Silverman, Standish, Westcoat, Ziegler, and the Secretary. — C. BURTON COTTING, *Secretary*, 111 Devonshire Street, Boston 9, Mass.

1901

In a recent letter Joe Evans writes in part: "I always enjoy reading your class notes in the Technology Review, and in the December issue I was most interested in what you say about our class reunion in 1946. Last May and June I spent in California, making Berkeley my headquarters, but taking trips from there down the coast to San Diego. I had a most enjoyable lunch with Jack Scully at Oakland, near his office. I spent a few days at the Rio del Mar Country Club (San José) and tried to get A. T. Griffin by telephone, but he was out. I am sorry not to have seen him. Mrs. Evans (the former Mrs. Nellie Mae Baker of Omaha) and I are hoping to come to your next reunion. We want to visit Exeter, N.H., where my class at Phillips Academy (1897) will hold a reunion. Then we should take in our reunion and attend M.I.T. exercises before setting out on our motor trip into Maine (for the good eating of lobsters); we should say hello to Roger Wight at Portland, then move on to Canada, northern Minnesota (for good fishing), and home about August 1. I hope that you can get a large attendance for the 1946 reunion."

I regretfully report the deaths of two classmates: William J. Sayward on December 21 at his home in Decatur, Ga.; and Ralph Whitman on February 3 at his home in Danbury, Conn.

The following report of the career of William Sayward was sent by C. A. Smith '99 of Atlanta to L. H. Turner '99, Secretary of the Atlanta Alumni Association, and forwarded by Professor Locke '96, Alumni Secretary: "William J. Sayward, 70, nationally known architect, died ... at his home, 403 Candler Street, Decatur,

[Ga.] on Dec. 21, '45. He was born in Woodstock, Vt., the son of the late Charles Woodbury and Melissa Follansbee Sayward. He received his B.S. at the University of Vermont in 1897, later winning his B.S. in architecture from ... Technology in 1901. In 1904 he married Miss Clara Louise Purple. Mr. Sayward began his architectural career in New York City in 1901, later going to Seattle, and moving to Atlanta in 1913. He became a member of the Edwards and Sayward firm here in 1914, and upon the death of Mr. Edwards in 1939, the name of the firm was changed to Sayward and Logan. He continued the association with the firm until his death.

"Among buildings designed by Mr. Sayward's firm were: structures at the University of Florida; the Florida State College for Women; Winthrop College; Columbia Seminary; Agnes Scott College, Decatur; Atlanta Girls' High School; York, S.C., County Court House, and the bank of Tifton, Ga. In addition he designed the Decatur City Hall.

"Mr. Sayward was a member of the Decatur Board of Education and the University Housing Projects. Formerly vice-president of the American Institute of Architects, he was also ex-chairman of the Affiliated Technical Societies of Atlanta. He was past president of the Camp Fire Girls and a director of the Boys' Club. He was a Mason, Shriner and member of the Atlanta City Club; a member of the Atlanta Civitan Club; and a member of the Atlanta Athletic Club. Survivors include his wife; two daughters, Miss Madeline Sayward and Mrs. Mary S. Rogers, both of Atlanta; and a grandson, Sayward Rogers."

In response to the recent class letter, I received from his home a New York newspaper clipping concerning the life of Ralph Whitman. It is quoted herewith: "Rear Admiral Ralph Whitman, USN, retired, died [in Danbury, Conn., Feb. 3] at his home, 30 Deer Hill Avenue. Admiral Whitman, former public works officer of the Third Naval District, with headquarters in New York, was 66 years old. Born in Boston, son of Kilborn and Ella May Whitman, Admiral Whitman was graduated from ... Technology in 1901. For four years he was active in bridge construction and design for the Engineering Department of the City of Boston. In 1905 he became a member of the Isthmian Canal Commission, which made studies for the Panama Canal, and in 1907 was commissioned an ensign in the Civil Engineering Corps of the Navy, serving for the next ten years at the navy yards in Philadelphia, Annapolis and Guantanamo, Cuba. In 1917 he was appointed an aide on the staff of the military Governor of Santa Domingo, serving as technical advisor on public works during the early period of American occupation. He was also a member of the Dominican Claims Commission, which handled more than \$15,000,000 in claims against the Dominican Republic.

"Admiral Whitman returned to the United States in 1920 to become officer in charge of construction at the Naval Ordnance plant at So. Charleston, W. Va. In June, 1922, he was ordered to take a course of instruction at the Naval War College, from which he was graduated in 1923. After graduation his assignments took him to the Bureau of Yards and Docks, Wash-

ington, D.C.; the Norfolk (Va.) Navy Yard; the Mare Island (Calif.) Navy Yard and Hampton Roads, Va. In 1939 he came to the Third Naval District, where he served until his retirement a year ago. For his service in the Dominican Republic, Admiral Whitman received a special letter of commendation with the Silver Star for engineering and administrative services. His other decorations included the Victory Medal with West Indies Clasp and the Marine Corps Commemorative Expeditionary Medal. He leaves a widow, the former Frances Guyon Seabrook; a daughter, Frances Guyon; a sister, Mrs. William Hanna of Bethel, Conn., and a brother, Kilborn of Boston. A funeral service was held here today. At the Navy's convenience a military service will be held for Admiral Whitman at Arlington National Cemetery."

Although the annual class letter was mailed only five days ago, we have already (as this is being written) received cards from 14 members of the Class saying that they expect to attend the class reunion on June 6 and 7 at the New Ocean House, Swampscott, Mass. No doubt many more cards will come in during the next week or two. — GUY C. PETERSON, *Secretary*, 788 Riverside Drive, New York 32, N.Y. THEODORE H. TAFT, *Assistant Secretary*, Room 3-266, M.I.T., Cambridge 39, Mass.

1903

A letter from Regestein, V, passes along to us an interesting account of work done by Frank G. Cox's son, F. Gardner, Jr., in the Borneo area. Lieutenant Cox acquired on his own initiative a sufficient knowledge of Malay dialects to prove of great value in obtaining information of Japanese troop movements. For this work and for his part in motor torpedo boat attacks, he was commended by Admiral T. C. Kincaid, Commander of the Seventh Fleet, and was presented with the Commendation Ribbon.

George Bradshaw, X, was pensioned by the Du Pont Company about a year ago, having reached the age of 65, and has been doing some consulting work in the South. Regie says he has completed 37 years with the Du Pont Company, as of February, and will normally be pensioned in June, 1947. He is pleased to announce his first grandchild, a girl, born last August. Our best wishes for a long and pleasant life in retirement go to an increasing number of the Class. Many of us are rapidly approaching that time. — FREDERIC A. EUSTIS, *Secretary*, 131 State Street, Boston 9, Mass. JAMES A. CUSHMAN, *Assistant Secretary*, 441 Stuart Street, Boston 16, Mass.

1907

Nineteen '07 men gathered in the Silver Room at Walker Memorial in Cambridge on the evening of February 15 for the first class dinner we have had since 1942, no effort having been made during the intervening years for such an affair because of difficult transportation and other unfavorable conditions due to the war. Partaking of the excellent steak dinner served by the Technology Dining Service were Howard Chase from Providence, R.I., Bill Coffin, George Crane, Paul Cumings, Ellis Doucette, Tom Gould, Ralph Hall, Ed Lee, Alexander Macomber, Ed Moreland, Prescott Nichols, Peabo, Bob Rand, Gilbert Small, Oscar Starkweather, Stanley Wires,

Harold Wonson, and Phil Walker and Bryant Nichols from Whitinsville, Mass. The Secretary presided and gave various messages and news items regarding some classmates who could not be present. He announced that, as of January 31, 116 men of our Class had contributed to the Alumni Fund, against a quota of 115, or 101 per cent, and that total '07 gifts amounted to \$3,262.25, with a quota of \$2,650, or 123 per cent. With two months to go before the end of the Fund fiscal year, it was hoped that our class showing would be somewhat improved. All of the fellows present enthusiastically agreed that we should certainly have a week-end 40th reunion in 1947, to be held if possible at the Oyster Harbors Club in Osterville, Mass., the scene of previous five-year reunions. The Secretary was instructed to write at once seeking reservations from Friday afternoon, June 6, to Sunday afternoon, June 8, 1947.

After these preliminaries, Phil Walker showed the colored moving pictures that he took at our 1942 reunion at Oyster Harbors. These brought forth many laughs and happy comments, as we saw excellent likenesses of our mates thrown upon the screen, with a touch of sadness as we watched Lawrie Allen, who has now gone from us, take a lusty swing at a golf ball, and then turn toward the camera with one of his genial smiles and a wave of his hand. Phil also showed beautiful colored movies of the lovely flower garden surrounding his home in Whitinsville. Then we sat around the dining table for an all-too-short hour and a half, listening to Ed Moreland tell of his experiences, observations, and impressions between August 5, when he arrived at Manila with Dr. Compton, and November 15, when he arrived back in the United States, after about three months spent in Japan, where he headed a government mission of five civilian scientists, four officers from technical military branches, with interpreters, clerks, and adviser. (Please see Dr. Compton's article, "Mission to Tokyo," in the December Review.) To attempt to summarize or describe Ed's talk here is impossible. As I told him afterward, it would have been fascinating if he had been a stranger to us, but since he was one of our friends, whom we have known for 40 years, it was especially delightful.

During the forenoon of February 1, Peabo telephoned to me at my office to say that he had just learned of the death of Bill Woodward, which had occurred in the early morning of that day. Bill had not been in good health for a long time. He was operated on last fall at the Peter Bent Brigham Hospital in Boston but had been up and around during recent weeks. The end came quietly. I wrote to Mrs. Woodward at South Yarmouth, Mass., a note of sympathy in behalf of the Class. Bill was prominent and popular while an undergraduate. From 1913 to 1917 he was associated with Franklin Miller, an industrial engineer; for the next three years he was general manager of the Standard Welding Company; and for four years, works manager for Fairbanks, Morse and Company. He later became vice-president of the Superior Steel Corporation in Pittsburgh. He specialized in the development of stainless steel. He retired from active business and for several years, beginning at about 1937,

developed the hobby of raising flowers and vegetables in chemical solution. During World War II he was a research engineer with the Curtiss-Wright aeronautical company at Caldwell, N.J. In 1937 he founded the National Citizens' Committee, which sought to arouse public sentiment against Communism. He was a 32d degree Mason, served on the town of Yarmouth school board and other town committees. In 1916 he married Ella M. Baker, who survives him. There were no children.

On January 29, I received the usual letter from the Advisory Council on Athletics requesting a donation from our Class. Harold Wonson, our Class Treasurer, agreed that we should contribute our usual \$25, and a check for that amount was mailed on February 1. — Bob Albro reports that he is in construction work with E. F. Carlson, Inc., of Springfield, Mass. His home address is 377 St. James Avenue in that city. Two sons and one son-in-law have been in the armed forces. Three grandsons is his record. — John Bradley, of Waterbury, Conn., thoughtfully sent me a copy of the record of a meeting of the New Haven County Technology Club held on February 1, which includes an account of how Hud Hastings, who is professor of economics at Yale University, "forcefully, decisively, and in simple terms, presented to a spellbound audience a summary of our national present position with respect to inflation and labor." A clipping from the New Haven evening *Register* of February 7, kindly sent to me by Howard Marvin, has a splendid picture of Hud and tells of his being elected president of the New Haven Community Chest. Both of Hud's sons were in the Navy during the war, one in the motor torpedo boat service in the Mediterranean.

Jack Kinnear has been re-elected president of the Nevada Mine Operators Association. — On February 3, I received a letter from Milton E. MacGregor written from Willcox, Ariz. It seems that he is taking a year off from teaching mathematics in the Boston high schools and with his wife is taking an automobile trip around the country, which will be over by the time you read this, as he expects to return East about March 30. He then plans to move from Needham, Mass., his home for many years, to "Silvermead," Lower Road, Brewster, Mass., a place that he has purchased. After another year of teaching, he plans to quit permanently and devote his time to raising cranberries, small fruits, and so forth, on the six-acre property he has acquired. — Harry Moody left the employ of Stevenson, Jordan, and Harrison of New York (the firm in which Howard Marvin is a partner) and is now in business for himself in the same line, industrial management. His address is Larchmont Acres, Larchmont, N.Y. — I have notification of a new address for John Tetlow — Box 762, Massapequa, Long Island, N.Y. — John Thomas is at 99 Magellan Avenue, San Francisco, Calif. — In the November Review, I mentioned the poor health of Chet Vose, as told to me in a letter from his wife. A note from her received in February says that he is gaining, but terribly slowly. I suggest that you fellows write him cheery notes. His address is Chester A. Vose, County Road, Marion, Mass. — Carl Trauerman has sent

me two clippings from the Helena (Montana) *Independent-Record* mentioning Roland H. Willcomb of our Class. One tells of his being elected the first secretary of the newly organized Montana section of the American Society of Civil Engineers. The other describes a meeting of the Helena Kiwanis Club on February 11, at which Willcomb in a talk called for a greater understanding of the American Indian on the part of the people of the United States. Our classmate has been adopted by the Blackfeet tribe as Chief Bull Buffalo Back Fat. — On August 1, Dick Woodbridge completed 37 years with the Du Pont people at Wilmington, Del., all largely devoted to the development of rifle and cannon powder. His son, Richard, 3d, Princeton, '39, M.I.T. Graduate School, '40, resigned his job with the electrochemical department at Niagara Falls last September and is now studying for a Ph.D. in chemistry at the Princeton graduate school. He is married and has a two-year-old son. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. HAROLD S. WONSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

1909

Last month we were able to report the luncheon of the New York '09 men, held at the Technology Club on January 26. Four weeks later 10 of us assembled at the '09 table at the annual Alumni Banquet, held at the Statler, in Boston, on February 23. Those present were George Bowers, I, Chet Dawes, VI, Tom Desmond, I, George Haynes, VII, Francis Loud, VI, Ben Pepper, I, Art Shaw, I, Chic Shaw, V, Henry Spencer, II, and Johnny Willard, II. The following were not present but were among the alumni hosts who made it financially possible for the graduating classes of '46 to attend: G. S. Brush, II, Jim Critchett, XIV, Bob Glancy, VI, B. E. Hutchinson, III, and Lewis Nisbet, I. We need not report on the banquet proceedings — how, to the satisfaction of all, delicious roast beef was substituted for the "Roast of Chicken, Virginia," scheduled on the menu, how Lee du Bridge relayed the "Story of Radar," from the Radiation Lab at the Institute, and how President Compton announced a surprisingly large building program projected for the Institute. Details of these items will undoubtedly appear elsewhere. George Bowers is still with the Federal Public Housing Authority in charge of installing water, sewers, gas, and other engineering work for the Authority. Tom is pushing legislation to prevent the projected State Thruway System being "marred and blotched" by billboards, and he also stands ready to sponsor legislation apropos the new U. N. O. site in New York State. George Haynes reports that Marguerite has left Washington and that she and her husband, Ted Embrury, who has returned from the Service, are now in New York searching for living quarters. We all wish them luck. Muriel is still with the Compton Company, in charge of radio commercials. Ben reports that his son Ed is on terminal leave from the Navy (he was a skipper on a destroyer) and may re-enter the employ of the Reynolds Metal Company. John is an ensign stationed at Pearl Harbor. Art and Mrs. Shaw are busy

looking after their two grandchildren while the parents, Dick and his wife, are on their second honeymoon in Vermont. Dick is on terminal leave and will soon be back with the Hartford Machine and Screw Company. Bob is now an interne at the Massachusetts General Hospital and will soon return to the Army. Chic's son, Bradford, is with the Sturtevant Company (now owned by Westinghouse) at Readville, Mass. While in England, Kendall Spencer married an English girl, who has studied engineering, and he is now on duty in Belgium. Johnny, who now has six grandchildren, has returned from Puerto Rico where his company has undertaken a large business project, and we hope that later he will tell us more about the island and its problems. Johnny Nickerson, II, who is with Johnny's company, was sent to the island only the day before the banquet (not very good timing), so that he could not attend.

From Paul: Harold Ballard is one of the Hufty-Dufties of the M.I.T. Club of Northern New Jersey. He reminded me of a dinner that the Club was staging on January 22 at a Newark hotel, and I went down. There were more than a hundred there. The speaker was Professor Carl Soderberg '20, executive officer of the Department of Mechanical Engineering at the Institute, a man I had never seen, I regret to say. His subject was "Jet Propulsion." I looked for tales of buzz bombs and planes driven by jets of gas. There were stories of that kind. But I found myself enthralled by the man himself. Some of you may have heard me say that the course that has meant the most to me, who took my degree in Course V, was not what I learned of quantitative analysis, which seems now to have been our major subject. No, it was not that at all. It was an elective course that Arlo Bates gave in my third year in what I think Arlo called Nineteenth Century English Literature. And it was Arlo's own personality that made the course so rewarding. The saddest words I ever heard as an undergraduate were those that closed the lectures: "Well, that will be all for today!" I am developing a theory that we influence people we meet if we can get in phase with their wavelengths. Now I am Model T when it comes to the technical details of Professor Soderberg's subject. But as a man, and as a key personality in the mechanical engineering courses at the Institute, I think he is a complete success! He gets on my wavelength and his potential makes me listen.

The following interesting communication has been received from Thomas H. Atherton of Lacy, Atherton, Wilson and Davis, architects and engineers at Wilkes-Barre, Pa.: "Your personal letter was so pleasant and friendly, and I was so flattered to get a communication from the 1909 Class Secretary, that I hasten to reply. Your remark about not having a wide acquaintance among the members of Course IV, architects, is natural. You see, we felt we were getting the M.I.T. degree the easy way, which gave us an inferiority complex, resulting in our chumming among ourselves, not venturing to mingle with the brains getting ready to hatch atomic bombs and differential calculators. You asked about my being a colonel. I got that the hard way, serving from 1914 to 1940

in the Pennsylvania National Guard, including three years in the United States Army as a battery commander during World War I. Battery F of the 109th Field Artillery, was my unit, which rendered creditable service as infantry battery in the Apremont salient during the Argonne. I remained in the 109th F.A. after the war, taking command of the regiment during the maneuvers in Virginia in 1938. On February 25, 1941, the day my regiment marched away for World War II, I was unceremoniously dropped as the result of an electric cardiograph. However, it all worked out for the best. I formed new business connections and have been very busy ever since. Our present organization consists of a group of architects and engineers, known as Lacy, Atherton, Wilson and Davis. Mr. Lacy, as well as being a registered architect, is vice-president of the Sordoni Construction Company, so that where the client is in a great rush, we can start construction about as soon as the drawings are started.

"Last summer I had calls from two Tech men, Lansing Carpenter, of United States Rubber, who paddled about the hotel lobby in a rubber boat, and Pete Reyburn '08, who was here to give a pep talk to a local branch of the American Chain and Cable Company. Pete always did have lots of pep! I recollect a Boston society wedding on Beacon Street where Pete punched a Harvard man in the nose and later knocked me down with a Seltzer bottle. I sympathized with him in the assault on the Harvard man, and in my case it was an accident. I am sorry I do not see more of Tech men. You recall that sometime after we were graduated the Institute moved across the river. About that time I went back for a reunion, and finding the hotels crowded, I called up my fraternity house for a room and was told I could be accommodated. The taxi driver said he knew the No. 6 Club, so I left it to him. I was cordially received but when getting ready for bed discovered a sign on the wall reading, 'Phi Beta Epsilon.' Knowing how serious the undergraduates are about grips and other secrets, I was quite alarmed. But on explaining and apologizing, I was allowed to depart intact.

"I have the happiest recollections of my life at the Institute. The professors who stand out in my memory are Cross, Sedgwick, Chandler, and Despradelle. I had a delightful experience with Professor Cross. I was trying to be excused from physics on the strength of having taken physics in Princeton. I had to admit I did not remember much about the subject. He asked, 'Did you cover electricity?' I replied, 'I can't remember, Professor.' 'Well, what do you remember?' We had a large brown book that cost \$3.50, I remember that.' 'Well, Mr. Atherton, the question is not what you know about physics now, but what you might have known sometime at some prior date. My son Bob, for instance, took physics at Harvard; now if you have ever been exposed to physics in any way, I feel you must know more than Bob. I am going to excuse you.' This enabled me to graduate. In a way, I owe my diploma to Professor Cross. His son Bob was killed in France during World War I. I was much touched last summer to have our son Charles, age 13, say, 'I am

going to be a chemist, and I want to go to Boston Tech.' Would I be proud? Our older boy, Bill, is about to enter the Naval Air Service, and our daughter, Mary, is at Pensacola, married to a Navy flier. I am fortunate in having a wife whose good sense and hard work have been largely responsible for my good health and prosperity. I send kind personal regards and affectionate good wishes to my Technology brethren past and present." — PAUL M. WISWALL, *Secretary*, 90 Hillside Avenue, Glen Ridge, N.J. CHESTER L. DAWES, *Review Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: MAURICE R. SCHARFF, 3860 Rodman Street, Northwest, Washington 16, D.C.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

1910

It has been more than two months since the Class has had any news in *The Review*. This may be due partly to your Secretary and partly to no information having been received from any member of the Class.

During the past month, however, one letter has come from Van Court Warren. Van evidently had his experience during his Army service, which he modestly describes as follows: "Someone must have sent in a good deal of information on my Army career, from the write-up in the June Review. In order that some colonels over me may not be offended by that account, let me hasten to explain that I was not running solid fuels in Germany for the Supreme Headquarters of the Allied Expeditionary Forces. At that time I was a lieutenant colonel and in charge of certain districts only; first the Aachen District, then, as the Ruhr was liberated, I took on No. 5 in the Ruhr, the last to be cleaned out. The work was most interesting, as it was our job to have the mines cleared and step up the production to take care of Europe this winter. I had about 40 mines under me and got 30 on production, before an enemy secret weapon, our jeep, took care of me. We dropped a tie rod and hit a steel pole. I was sent, with a cut over the eye, to a field hospital, which picked up a leaky valve in my heart; so it was home-ward bound for me. That hospital route is a slow one — nearly two months between Aachen and Paris hospitals, and a total of four before I was sent on terminal leave from Auburn, Calif., my old home. I try to tell the medics that if they were only good engineers they would grind that valve and the pump would be as good as ever. I was supposed to be retired, but the surgeon general bounced the findings at Dewitt General, so here I am back again for another check. Just how long I shall be here is a real question. I have picked up a pair of eagles to wear on my shoulders instead of the silver leaves I wore so long. Howard F. Clark '12, a colonel, now retired and living near Chicago, was around my part of Germany, and we saw a good deal of each other. It was good to be with another Tech man, and especially so as he was Phi Beta Epsilon, too. During my leave we finally found a house in San José, Calif., at 1285 Vernon Avenue, which will be a permanent address for me. I shall have to take up something new, as the pump will not permit of mountain climbing and chasing around mines any more. That is

about all the news I can give from this end of the world, other than that I prefer California rain to the variety they hand out here in Washington."

I had luncheon with Dud Clapp recently. Dud is still manufacturing textile oils but is rather discouraged at present by the lack of raw materials required in his business. I occasionally meet Abbott Allen, who is working with Stone and Webster. And now that I have moved my offices to Tremont Street, I have the pleasure of having luncheon with Ralph Horne. I also see John Wentworth at least once a month, when we usually talk over our experiences while we were working on renegotiation for the Corps of Engineers.

Eight members of the Class attended the Alumni Banquet on February 23 at the Statler Hotel in Boston, namely: Charles Wallour, Jack Babcock, Al Huckins, Carl Sittinger, Cliff Waldo, Carl Lovejoy, Art Curtis, and your Secretary. It was a most enjoyable occasion, and each one took home his souvenir stein as a reminder of one more Technology Banquet. News of the 1910 reunion should be in the mail within a very few weeks. — HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston 8, Mass.

1911

It's Washington's Birthday, so I cannot tell a lie — and it's no lie when I inform you that even before the second publicity pieces for our 35-year reunion have gone out, all indications are that, as in 1941, our total attendance will top 100 (117 five years ago). Yes, sirs, at this writing we have "chances good" checked by 45 classmates, indicating parties totaling 85 to 89; 32 classmates, involving 51 to 52 attendees checked "fair"; and 46 feel that attendance chances are "slight." Lest you forget (as if you could), the affair is scheduled for the Memorial Day week end — May 31, June 1 and 2 — at East Bay Lodge, Osterville, on the south shore of Cape Cod, and it's fine to be able to announce that President and Mrs. Compton are planning to be our guests for at least part of the reunion week end. Spring will have sprung by the time these notes reach you, and the urge to attend should certainly catch up to you by then, and all you have to do is "write to Dennie." So do!

We lost one of our active and enthusiastic classmates in mid-February when Joseph Cheever Fuller, II, died at the Newton, Mass., Hospital. A lifelong resident of West Newton, Joe came to Technology from Newton High School, became a member of Delta Kappa Epsilon and was active in track, Tech Show, and "Technique." For years he had been with the Northern Industrial Chemical Company in South Boston and at the time of his death was its vice-president. He had also been active in Newton Boy Scout work. Jack Herlihy and Tom Haines, both classmates of Joe's, represented the Class at the funeral. He leaves his wife, Mrs. Ruth (Brodhead) Fuller; two sons, Garrett B. of West Newton, and David R., now in the Navy; and two brothers, George S. and Alfred E., both of Newton. The family home is at 33 Fountain Street, West Newton.

Word has also been received that Kester Barr, II, died on November 25 from a heart attack, although details are lacking. Kes

had been for many years with the Poca-hontas Fuel Corporation in Chicago and lived at 965 Spruce Street, Winnetka, Ill.

Walter Allen, XIII, with the A. C. Lawrence Leather Company in Peabody, writes of another junior '11 marriage, saying: "Our son, Dick, returned from Germany in early January and on January 16 was married to Jane Cooper of Hartford, Conn., and hopes to settle in this vicinity after a honeymoon trip. Martha, one of our twin daughters, has announced her engagement to an M.I.T. man, John Matthews of Scranton, Pa., who was graduated with honors in 1944 and is now an ensign in Uncle Sam's Navy, specializing in radar. Marion joins me in best regards, and here's looking forward to as pleasant a party as we had in 1941!" — On January 8, Rufe Zimmerman, IX, and his wife, of Short Hills, N.J., announced the engagement of their daughter, Anne Burns, to Captain Nelson O. Price, A.U.S., son of Mrs. Myron W. Adams of Boston and the late Bliss Allison Price. Miss Zimmerman is a graduate of the Kent Place School of Summit, N.J., and Vassar College and is with the Office of the Quartermaster General in Washington, D.C. Captain Price, now on terminal leave, has just returned from three and a half years in the South Pacific with the American Division. — One day later Joe Harrington, VI, and Rose, of Larchmont, N.Y., announced the engagement of their daughter, Mary-Elizabeth, to Walter E. Conway, Jr., son of Mr. and Mrs. Conway of Riverdale, the Bronx. Miss Harrington was graduated from Mundelein College, Chicago. Mr. Conway attended Trinity College, Hartford, Conn., and was recently discharged from the Army. To all these youngsters, the best of everything in life!

C. B. Smythe, I, recently wrote telling of the death of his father, F. A. Smythe '89, on November 8 at Elyria, Ohio, where he had been president of the Thew Shovel Company. C. B. is an executive with the same company and wrote: "Although I attended Technology for only one year and consequently have not been so close as might be the case to members of my Class, I hope sometime to attend an '11 reunion. If I can't do it this summer, perhaps I shall live long enough to do so in 1951."

I had a fine renewal of acquaintance with Louis Golden, VI, in mid-February while in Boston on business. It came about as the result of a fine letter from Louis, accompanying his class dues: "I have read from time to time your notes in The Review, which comes to me regularly, and I have often wondered whether any of my old friends even remembered me. I have been married 31 years, and my wife and I have but one child, a son, who is still a captain in the Medical Corps of the Army, attached to the Amphibious Engineers. He has been in service now for three and a half years and has endured many hard knocks in the South Pacific, having been on New Guinea, New Britain, Hollandia, and Leyte and in the Lingayen Gulf in the Philippines. He has a very charming little daughter, almost two years old, and it goes without saying that I am completely enamored of her. As for myself I strayed from the engineering field some 27 years ago. After leaving the Institute, I was with General Electric in Schenectady and

later at the Lynn plant in an engineering capacity, but by 1915 I was about to be married and needed more money, so I entered the field now called plastics, but then called celluloid. An economic catastrophe in 1921, which I still believe was beyond my control, as the depression was well on the way at that time, again forced me to seek a new field. I became affiliated with my present associate in the retailing of boys' clothing, and for almost 25 years now we have leased the boys' departments at Kennedy's, here in Boston, and have been operating them quite successfully. In addition to my vocational efforts, I have become much involved in community work, particularly in the line of charitable endeavors. Of course, play does come in for its bit occasionally, especially golf. We live at 709 Centre street, Newton, and I certainly hope that my good wife and I can be present at Osterville on that Memorial Day week end."

Also from the Newtons — 154 Lowell Avenue, Newtonville, to be exact — Ted Van Tassel, X, writes: "Helen and I are planning to be with the gang on the 35th. We've made a temporary change of address until we move from here to Cohasset as soon as the C.I.O. will permit me to get some heating equipment installed there. Both the new shoe process and the sole and insole leather conversion processes are coming along well and are keeping me busy every minute and require considerable traveling for the next few months; but I'll arrange my schedule so that the Memorial Day week end is free and clear for the reunion."

Erv Young, I, writes from 54 Warwick Street, East Orange, N.J., that he is "dreaming of the 35th but can't say definitely for a while." He is now with the Ford, Bacon and Davis Engineering Corporation at 39 Broadway, New York City. Another hopeful reunion attendant is Ban Hill, I, of 1812 Sulgrave Avenue, Baltimore, Md., who in late 1945 retired as active head of the Baltimore Transit Commission and is now a consulting engineer. He says: "As for personal news, thank Heaven there is none. I am enjoying peace and quiet for the first time in 35 years. I have enough work to do if I want to do it, and I don't have to do it. Could anything be more so? I even had time to read up on the atom. When you and I left school, the atom, like the constitution, was the last word in everything, and now look at it, or them."

Now for a few regrets. Bob Haslam, X, Standard Oil of New Jersey vice-president, says he will be unable to attend because the annual meeting of his company comes on June 4, and on account of his particular responsibilities at that meeting, it will be difficult for him to be away in the few days just prior to it. "With the war over," he writes, "I have to begin doing some of the traveling that has been piling up. I was over in Europe last September and October; and early in February, I am leaving for South America, to be gone until the end of April. I was awfully sorry not to have been at the luncheon for you here in New York in early January, but our board had invited a guest for luncheon that day, and I just couldn't get away. It would have been a real pleasure to see some of the old crowd."

From the University of Illinois at Urbana, Harold Babbitt, XI, professor of civil engineering, writes: "It is with the greatest regret that I report, 'Count me out,' on the 35th reunion. It's no lack of desire, but need to keep on the payroll here in Illinois, that makes it impossible for me to be footloose on May 31. Please tell me how you explain the increase in attendance at our reunions, as time goes on. I've plotted the curve, and if it continues to grow, there'll be more at the 50th than were at graduation!"

From Baton Rouge, La., where he is on the faculty of Louisiana State University, Harry Waterfall, II, similarly bemoans the fact that the dates come just wrong for him; while from Cloquet, Minn., Stu Copeland, II, President of the Northwest Paper Company, writes: "Sorry, but I am afraid my chances of making the reunion this spring are slight. The rush is still on with me."

Bill Warner, I, oil baron in Nowata, Okla., is afraid he won't be with us this year, but if at all possible "will arrange any trip East to tie in with the Memorial Day week end," adding: "One son is in Washington in the Pentagon, hoping to get discharged soon, after a year in Africa and 18 months in Italy. The other son is in Japan. He was in Germany and took part in the battle of the Ruhr. Then his division was transferred back to this country, going almost at once to the Philippines and thence to Japan, where they arrived after the war was over. Our youngsters have seen more of the world than their parents." — Old Pop Hufsmith, VI, First National Bank President in Palestine, Texas, opines: "You say I owe you a letter. Will you settle for a post card? I'm not doing so well — have had the flu about three weeks and feel rotten. The boys at Washington have me worried — it looks as if they were letting the good old ship come apart at the seams."

We can all be very proud of 1911's record in Alumni Fund VI — for we were exceeded only by 1907, another fine class, in the amount of money raised and also are right up there on percentage of contributors. To you loyal classmates who make these fine showings by 1911 possible each year go heartfelt thanks from your Class Agent — ye sec.

Fourteen classmates were on hand for the late February Alumni Banquet at the Statler, with 11 members of the 1946 senior classes also present, when 11 Eleveners had bought tickets for that purpose. Those at the record-breaking banquet, which over 1,100 attended, were Obie Clark, II, George Cumings, VI, Dennie Denison, VI, Henry Dolliver, I, George Forristall, II, F. C. Harrington, I, Jack Herlihy, II, Hal Jenks, VI, Charlie Linehan, I, Roger Loud, VI, Otto Meisel, II, Carl Richmond, I, Emmons Whitcomb, X, and Aleck Yereance, I. Locally, ye Sec, along with Dolliver, Harrington, Meisel, and Whitcomb bought an extra ticket each for a senior to attend, while from across the nation, literally, came contributions from Minot Dennett (Detroit), Bob Mather (Windsor Locks), Don Stevens (Paterson), Bill Warner (Nowata, Okla.), Bunny Wilson (Pittsburgh) and Rufe Zimmerman (New York City), to account for the 11 seniors who were guests of the Class of 1911.

A few address changes to close: Colonel Henry C. Davis, VI, Fort MacArthur, San Pedro, Calif.; Colonel C. Phillips Kerr, II, Headquarters A. S. C. O. M. O., A.P.O. 315, care of Postmaster, San Francisco, Calif.; Joseph F. Harrington, VI, 4 Pine Brook Drive, Larchmont, N.Y.; Burgess Darrow, VI, Box 141, Rural Delivery 7, Akron 3, Ohio; Roy D. Van Alstine, I, 455 East Ocean Boulevard, Long Beach 2, Calif.

Happy Easter greetings to you all and C U 5-31. — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

1913

Harry Peck wrote: "Jim Russell, II, dropped in to see me recently. He is still running the Daniel Russell Boiler Works in South Boston. His two sons, Gordon and Daniel, are out of the Navy and are joining Jim in his business. Both boys were officers and saw considerable active service. Gordon's ship was in action during the whole Okinawa campaign. Danny was running a landing craft during the Anzio Beach landing in Italy. Both boys are married, and Gordon has a baby." Ed Gere, I, a colonel, is now at the Elmira Army Service Forces Depot at Horseheads, N.Y., and says: "Amongst the items in your request for news, the word 'travel' sticks out. Though I have been in the Army for some time, I didn't travel outside of the country during the war except for a trip to Canada in connection with the supply of the Alcan and Canol Projects in their early days. With only a little time before retirement for age, I would seem destined to end as a Z.I. soldier. I was represented, however, as my older boy went to France a year ago and was in the windup. He has been driving a tank retriever around France, Belgium, and Germany. My war service was as director of supply of the Sixth Service Command at Chicago, commander of the Savannah Army Service Forces Depot in Georgia, deputy director of the storage and distribution division of the Office of the Quartermaster General in Washington, and commander of the Elmira A. S. F. Depot since October 1. I would be glad to see any of the old gang, should they be in this vicinity."

It was very thoughtful of Brigadier General Waitt '14, to send me a copy of a recent (November, 1945) letter, to him, from Brigadier L. H. Lemaire, "Chevron," written from a hospital in Melbourne, Australia. I quote from this letter: "I have been vegetating since landing here four months ago after evacuation from Bougainville with dermatitis, arthritis, malaria, and pneumonia. You appear to have had a wonderful trip from here on, leaving hardly any part of the globe untouched. Needless to say, I feel rather envious, particularly at present while lying here. My own family have been busy since you were with us. Jim, the eldest, has been discharged from the Army and is being admitted to the bar during the first week in December. The other boy is based on Morotai with his ship and has seen considerable action. Diane is still plugging away at research work and has taken further courses in mathematics at the University. Kitty is quite well and joins me in sending our very best wishes and hopes that we shall be able

to have a reunion on your side of the world before many moons have passed. Owing to inability to use my arms or hands, I am asking one of my old staff to sign this letter and send it along on my behalf." Lemaire is a true "salt of the earth" man, and I hope that he recovers his health completely and soon.

George Bartlett, III, died at Elizabeth, N.J., on December 5, after a year's illness. He had been teaching mathematics for nearly 25 years in the Thomas Jefferson High School. He was kindly and considerate as a student at Technology, and these qualities stood out in his later life. He left a son, Forrest, music teacher in the Elizabeth schools, and Mrs. Bartlett, who wrote: "Thank you for your letter and the kind expression of sympathy from yourself and the Class of 1913. George made many friends all through his life, and I have often heard him speak of you and other M.I.T. classmates. Enclosed is a notice from the *Elizabeth Journal* and also one from the paper of the school where George was a teacher for many years. Perhaps these will give you the information which you requested. George also did research work under the direction of Professor Carle R. Hayward, at Technology, during the years 1918-1919. If there is anything more which you would like to know, I shall be glad to help you if I can. Again I thank you for your thoughtfulness in writing to me."

Paul C. Warner, IV, notes: "I am commanding officer of the Naval Air Station, at Cape May, N.J. I was in New York yesterday and talked to George MacTarnaghan, who was a Course IV man of our Class. He was well and stated he was very busy. I received a Christmas card from Bill Herbert, also Course IV. He is in Los Angeles, Calif., and is likewise doing well. His several boys were expected home from the Pacific at the time I heard from him." Earle Caldwell, X, was elected president of the Casket Manufacturers Association of America in Chicago last December. He called on Norman Clark, X. He found Norm still laid up as the result of a fall he suffered two or three years ago. Norm hasn't been able to work for two years, is hungry for news, and very eager to hear from his old friends. Here is an opportunity to do a kind deed. Won't you Course X men and others who knew Norman write him a letter, at 2230 Washington Avenue, Norwood 12, Ohio? George Summerville, VI, is on an assignment in Germany, doing evaluation work for the War Department, on German industries. He is on leave of absence from the New York State Public Service Commission, where he has been employed for 11 years.

Major General Albert M. Jones, I, took command of Camp Beale in California on February 15. J. B. MacNeill, VI, wrote during the steel strike and urged me to visit him in a smokeless Pittsburgh. He also wanted to say hello to Joe MacKinnon. Vic Mayper, I, expects that his son Victor, Jr., will be a Course VIII senior at Technology next June, at the age of 18. This beats his father's record, and that of most others, by four years. Bob Portal, VI, writes: "Back in business at Auto List, Inc., direct mail and auto listings, after two and one-half years in the Military Police, with no overseas duty but plenty of travel in the eastern United States. Business is very

good, but we still cannot get the help to produce. I lost my wife several years ago and am married to an excellent girl met in Springfield, Mass., during the war. Anytime any of you men is in my vicinity, drop in and say hello." Harold Rand, I, says that the last few years haven't been any picnic in the food business and that no relief is in sight. That's bad news for gourmards. Take heart, you Course I men, looking forward to days of well-earned rest, from Clarence Roe's letter, which follows: "I enclose what at one time passed as a dollar bill, as class dues. You mention class news. I never have been much good at passing on any news of myself, but if you really want some, I'll make a stab at giving some data on myself and family. I have all but retired from things active and divide my time between New York City, Lansing, and Charlevoix, Mich. My oldest son is a pilot with Transcontinental and Western Air, Inc., and at present is on the New York to Kansas City run. Our second boy, out of the European theater of operations and the Army last fall, is a senior at Williams. Our daughter is a senior at Dana Hall School in Wellesley; and our youngest, a boy, is in his first year at the Hill School, having been graduated from the Fessenden School in West Newton last spring. I failed to mention that Edward, our oldest child, is married and has two fine boys of his own." Clarence was president of the Ideal Power Lawn Mower Company at Lansing.

Good old Gerry Lane, V, was thinking of our 35th when he wrote: "I was glad to get your letter to the members of the Class even if it costs me a dollar, which I enclose. I am still at the Kodak Park Works of the Eastman Kodak Company as assistant to the general manager. During the war 750 of our younger technical men were at the RDX plant and the Oak Ridge atomic bomb plants in Tennessee, both of which Kodak operated, so we older ones had some extra to do. Put me down for the 35th reunion in 1948. We ought to have one more look at one another." Here's an optimistic note from Warren Glancey, X: "News is a fleeting thing, but like everyone else, we are trying to do things which have not been done before. We view inflation, labor, production, retirements, recruiting, discovering, developing, marketing, all as parts of the problem of reconversion. At least there is no time for mischief. After many years, I saw George Clark, who is vice-president of Formica, at a meeting of the Institute of Architects in New York. George gave a fine 15-minute talk before a combined group of architects and plastics engineers. Yes, I am still at Hood Rubber Company, busier than ever in development work." Things are about the same with George Clark, II, except that he finds reconversion much tougher than getting into war business.

Bill Ready, VI, substantial businessman and good Class President, contributes: "Your general letter of January 30 is very much to the point. The one thing that I do not understand is how Joe MacKinnon and you can go so far on so little. Frankly, what do you do with the extra money left over after the necessary expenditures are made from the \$1.00 bill that you ask for about once in every 10 years? I hope that you don't get into trouble with it. You speak of 'dried up correspondence.' Don't

you know that '13 has to hibernate and store up energy in order to make one grand blast at the proper time? They always did, and they always have, and at this point it is a little late to teach an old dog new tricks. It simply means that 1948 will find them clicking out and having a blowout to end all blowouts. Seriously, do you realize that in two years, we shall have been out 35 years, and very soon we should begin preparing for that eventful day. As to correspondence, I believe the majority of us, much as we should like to write, have been rather busy for the past five years. In our case, we built radio communication receivers for the war effort to the extent that three out of four ships in the Navy that were larger than landing craft carried one to ten of our receivers. We also built a great number of receivers for the Army, Great Britain, Russia, and Free France. In addition, we supplied many manufacturers with parts for radar and transmitter equipment. At times, we were in such a tailspin that we didn't think we should ever be able to pull out. At other times, we didn't care whether we pulled out or not. You know you get that way; but in spite of all our trials and tribulations, the Armed Forces thought enough of us to give us five awards and left us with two important contracts for ultrahigh frequency gear that will run into 1947. Many times I thought about you, Fred, and from the sound of notes in *The Review*, figured that you had your troubles, the same as we did, and were doing an equally important job. Right now, we are still carrying on for Uncle Sam and are beginning to deliver a small amount of gear for the amateur fraternity for their postwar work. Believe me, it's hard. With deliveries, scarcities, ceilings as they are at this time, the struggles of the procurement department are really something. Then again, we shall live to laugh at them, just as we are beginning to look back on this war as a bad nightmare. One bright spot in our sky came last Christmas when young Bill got back in time to eat Christmas dinner with us. That repaid us for all the hardships we experienced during the war."

We had a good attendance at the Alumni dinner, on February 23. Present were Effie Norton, Frank Mahoney, Austin Wardwell, Burt Cushing, Phil Burt, Jimmie Russell, Julian Adler, Bob Weeks, Bill Ready, E. M. Bridge, Phil Capen, Ed Cameron, and Hap Peck. Young Bill Ready sat with the crowd. He was a captain in the Army Air Forces and flew all over the Pacific theater. Julian Adler's son was graduating, an ensign, and his dad came up from Alabama for the occasion. Bob Weeks showed some interesting things that he is making at his Wind Turbine Company at West Chester, Pa. His loops for steel cables are made with a pressed aluminum alloy sleeve. Tremendous pressure is required, but the job is really bonded and done quickly. These loops are for such things as transmission tower guys and hoist slings. — FREDERICK D. MURDOCK, *Secretary*, Murdock Webbing Company, Box 788, Pawtucket, R.I.

1914

It was just four months ago that these notes told of General Omar Bradley's appointment of Bert Hiller as manager of the

New England branch of the Veterans Administration under the new decentralization policy. Hiller got the new work under way promptly, and excellent results had been accomplished when on February 15 he was stricken with a heart attack. He was taken to one of his own Veterans Administration hospitals but failed to rally and passed away four days later. Before coming to Boston, he had had a long tour of duty in Washington, serving as a medical statistician in the United States Public Health Service, then in the Veterans Bureau and Veterans Administration. He had been executive assistant to the Administration of Veterans Affairs since 1930. Adelbert Delano Hiller was prepared for the Institute at Tabor Academy of Marion, Mass., to which town he had moved from Brooklyn at an early age. At Technology his chief interests were the Tech Show and the relay team. He was a member of Theta Delta Chi. During the first world war, he served as a lieutenant in the Sanitary Corps. He is survived by his wife.

To Art Peaslee and to his two sons and daughter is extended the sympathy of the Class on the death of Mrs. Peaslee on February 17 at West Hartford, Conn., after a long illness. Mrs. Peaslee was the former Anita Clark and was graduated from Simmons College, Boston, in 1914.

George Perley and Mrs. Perley have announced the engagement of their daughter, Pauline, to Norman Lunny Maguire of Stamford, Conn. Miss Perley was graduated with honors in physics from Mount Holyoke College, and Mr. Maguire is a graduate in electrical and mechanical engineering from Lehigh University. Both are employed in the research department of the United Aircraft Corporation at East Hartford, Conn., of which organization Dinney Chatfield is secretary of the corporation.

In addition to being president of the National Atlantic Research Corporation, Clarke Atwood has been elected vice-president of the Delaware Resin Chemicals Corporation in charge of development. The company operates in Wilmington, Del., and it is expected that their production of finished goods will shortly begin.

Two Alumni Dinners are being held this year, one on February 23 and the second on June 8. After this, the war speed-up program will be abandoned and the once-a-year Alumni Day restored. When these notes are being written, two days before the first event, the following have purchased tickets for the 1914 tables: Atwood, Crocker, Leigh Hall, Hamilton, Mackenzie, A. V. Swift, Tallman, Trufant, William Jackson (honorary '14), and your Secretary. Crocker had planned to bring his two sons, but his eldest son had an acute attack of appendicitis, followed by an embolism, and is still confined to a hospital here in Cambridge.

If you can possibly be in Boston on June 8 for the first postwar Alumni Day, be sure to come. A lot of other 1914 men will be there. — H. B. RICHMOND, *Secretary*, General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York 19, N.Y.

1915

Pay your class dues! Now is a very good time to send in your check. Here's the good

news: our victory reunion will be held on June 13, 14, 15, and 16 at the Cape Codder Hotel, Falmouth, Mass., on Cape Cod. The first notice has already been sent you, and I urge you all to come. Return the postal card at once. Did you have a good time at our 25th reunion? Well, you'll have an even better time at this one. The work-horse committee of Max Woythaler, Henry Sheils, and Sam Eisenberg spent a Sunday in February inspecting the Cape Codder and interviewing its genial host, Captain John R. Peterson. (Weare Howlett was ill and George Rooney working at the time, so that they could not accompany us.) This really is going to be a super-party! Next month's notes will bring you the story of the Boston class dinner on March 14, clinching the final arrangements.

From the letters that have been coming in with the class dues collected to date, we have the following: Philip L. Alger, 1758 Wendell Avenue, Schenectady 8, N.Y.: "Are you planning our 30th reunion this summer in Cambridge? . . . I am publishing a book of verses written by my wife, whom we all knew at Tech as Catharine Jackson. It should be out by March 1, and the title is 'Romany Rhymes and Domestic Ditties.' I enclose two pre-prints from the book which you may find interesting. . . . My son, John R. M., has just completed his freshman year at the Institute. He has been turned down by the Army on account of his eyes and so is looking forward to the work of Course VI with much enthusiasm." Sol Schneider, 310 Washington Avenue, Manoa, Upper Darby, Pa.: "I am looking forward to our victory reunion. . . . I have nothing of importance to write at this time except this note taken from *Science* about our own Jim Tobey: ' . . . Col. James A. Tobey was decorated on 4 December 1945 with the *Ordre de la Santé Publique*, grade of *officier*, by the French Republic. The presentation was made in Stuttgart, Germany, by Inspecteur General Coulon. Col. Tobey returned on 24 December to his home in Rye, New York, after two years and eight months' service overseas, the last seven months as Deputy Military Governor of Wurttemberg-Baden in Germany.' "

Theodore F. Spear, Rumford, Maine: "This isn't intended to be a letter about myself. There hasn't been enough change since I last saw you except that just so many more years have skipped along. A little less hair, what there is left a little whiter, not much more weight, and so it goes. . . . One daughter is out on her own, graduated from Wheaton last June, and now a biological laboratory technician at Lederle's (must have got something from the old man anyway); the other girl is a freshman at Barnard, thinking she is going into personnel, and from my experiences in bargaining with unions, she's a glutton for punishment to want that. . . . And, outside of that, working hard most of the time. . . . Now about yourself, you have managed to stick pretty close to Boston, haven't you? and to my way of thinking, that's all to the good. I still think it is the best I've seen so far."

Fred C. Cook, 63 Buckingham Place, Lynbrook, Long Island, N.Y.: "The things you would probably like to hear about me are just the things I should not care to write about."

J. B. Neal, Norton Laboratories, Inc., Lockport, N.Y.: "What in the world is going on now? . . . I think that class secretaries, like unions, should be forced to incorporate and render a financial report of responsibility. . . . This will never happen, of course, so I am enclosing a check, knowing that you can't buy a suit of clothes with it since none is to be had, and liquor is also pretty scarce. . . . I have been halfway toying with the idea of going down to the graduation exercises on the 23d, but as things stand now, I think I shall pass it up and get my rest." Let me add to this, mention of a pleasant lunch I had in Boston with Mrs. Neal and Peggy, who was in town from Cushing Academy, where she is preparing for the Institute.

Vincent Maconi, 63 Brookside Drive, Hamden 14, Conn.: "My son Richard '44 is due home from the Pacific this week Wednesday!"

Sanford L. Willis, Hotel Fairgrounds, St. Louis 7, Mo.: "I am still on the same old round, complicated right now by the steel strike, which has cut off our supply of wire for wire glass and miscellaneous metal required for development machines and projects. As a result, I have turned junkman and haunt the scrap metal yards to supply the latter deficiency. . . . My family, at least my son and Peggy, have just had a round of illness, but both have recovered. In fact, Mrs. Willis is in the East right now, checking up on the situation and doubtless doing her best to spoil the four grandsons. . . . Our chief problem at the moment is to find ways and means to salvage any of our furniture, which is in storage in White Plains. Two of the children who are furnishing new homes are like a pack of vultures, and if we ever do find a place here, I foresee that we shall have to buy a complete new outfit or sleep on the floor and eat off it, too. . . . My regards to all the gang — not forgetting yourself."

Kebe Toabe, 408 Winthrop Place, Elizabeth 3, N.J.: "I must admit that you are a high-pressure salesman and enclose a check to 'help Azel.' I hope it will be enough, and of course if you run short again after our party in June, I will be glad to help out again. . . . As for news, things are breaking so fast it is hard to know where to begin; of course with old bucks like us, our children's experiences are more interesting than our own. . . . The happiest occasion for my wife and me was the homecoming of our son, Corporal Sidney Lee Toabe. After his being wounded twice, once on Guam, and then on Iwo Jima, it was really a gift from heaven to have him back alive and in good health. He is now working with my crew for the Elizabeth Plate Glass Company and on June 1 is going back to the University of Wisconsin, his alma mater, to complete his study in the field of physical education. As you no doubt know, the G.I. Bill will give an additional three years of education, and he plans to take full advantage of it and go for his Ph.D. Another very happy occasion was the engagement of my older son, Eugene Toabe, on February 17 to Eileen Block of Newark, N.J. He is in charge of our office. . . . So you see there are many pleasant things to do and talk about. I hope this will be of some interest to our classmates, and here's best wishes till we

meet again at our reunion in June." Congratulations to you and your son, Eugene, and his fiancée!

Then I received this body blow from that hard-working committeeman, Max Woythaler, Hodgman Rubber Company, Framingham, Mass.: "It is reported that these funds are used, in part, to purchase liquor which is consumed at class dinners. Could this be true of the Class of 1915?" Max, the answer is YES!

Marshall B. Dalton, 65 Sylvan Avenue, West Newton, Mass., has recently been elected a director of Arthur D. Little, Inc., Cambridge, Mass., and to the board of trustees of the Newton-Wellesley Hospital, Newton, Mass., both important jobs for Jack.

Abe and Haya Hamburg, 220 South Street, Brookline, Mass., are happy to announce the engagement of their daughter, Ruth, whom many of you will remember at our 25th reunion, to Lieutenant Abraham Charnes, U.S.N.R. He received his B.A. and M.A. at the University of Chicago and is now studying for his Ph.D. at the University of Illinois. Congratulations from the Class to this couple!

Henry L. Leeb, 261 Fifth Avenue, New York 16, N.Y.: "Recent communications from you and from the Institute have been addressed to me as an officer in the Navy, which is incorrect, as I was not in the service this time. Perhaps you will be kind enough to set the record straight. . . . As regards your request for a letter about myself for the class notes, I shall have to plead lack of material of sufficient interest to warrant publication. . . . I hope to be able to attend some class gathering some day soon and shall look forward to seeing you then."

Notice that I have given the addresses with each one of these letters because, with the coming victory reunion, you may want to get in touch with some of these chaps and arrange to meet them at Falmouth.

It is very sad to record the passing of two of our classmates, Dr. Herbert W. Knight of Bostic, N.C., on November 4, 1939, and Donald H. White, 6103 Colbert Street, New Orleans, La., on September 3, 1944. Neither of these men was active in the Class, and at this time there are no details about their deaths available.

Pay your class dues. Plan to come to the victory reunion. Sign that preliminary postal card and return it at once! All this goes to "help Azel." — AZEL W. MACK, Secretary, 40 St. Paul Street, Brookline 46, Mass.

1916

Charles J. McCarthy, Vice-president of United Aircraft, has just returned from a vacation at Hobe Sound, Fla. He is planning to attend our 30th reunion at the Oyster Harbors Club on or about June 7. Your Secretary and George Petit, both of Hartford, are planning to be on hand. Bill Farthing seems to feel that Steve Brophy will again serve as chairman for the 30th reunion committee, although no definite word has as yet been received.

The Advisory Council on Athletics has again asked for a special contribution to assist in the underwriting of expenses in connection with the athletic program of the Institute. Interested classmates should make checks payable to Ralph T. Jope, Sec-

retary-Treasurer, Room 3-219, Massachusetts Institute of Technology, Cambridge 39, Mass. — JAMES A. BURBANK, *Secretary*, The Travelers Insurance Company, Hartford, Conn. STEVEN R. BERKE, *Associate Secretary*, Berke-Moore Company, Inc., 11 Boylston Street, Brookline 46, Mass.

1917

A recently released newsreel by the Engineer Corps, titled "Snakes," prominently displays one of Hubert Wellcome's cable dispensers mounted in the rear of said snake. It is said to be quite a sight. — Al Moody, for the time being, is located in Chicago with Keasbey and Mattison Company, 100 West Monroe Street. He says in a letter to Ray that the housing situation in Chicago is even worse than reported and expresses the hope that it will not be 20 years before he gets back to Boston again. — As previously reported in these notes, Clair Turner is this year a visiting professor in health education in the new school of public health at the University of California. He is particularly concerned with the establishment of a program of study and the inauguration of the necessary new courses in health education for the graduate training of health educators. He should be addressed at the School of Public Health, University of California, Berkeley 4, Calif.

Ralph Ross was transferred on January 1 from Philadelphia to Chicago, where he is area plant manager of the long lines department of the American Telephone and Telegraph Company. In this new assignment he is in charge of plant operation — engineering, construction, and maintenance — in the states of Michigan, Ohio, Indiana, Illinois, Wisconsin, Iowa, Minnesota, North and South Dakota, and Nebraska. Ralph says in a recent letter to Ray: "While the territory is new and large, the work is of the same general character as that I was handling in Philadelphia. During the past year, two more of my daughters were married, making four in all, and I acquired two more grandchildren, making a total of three, all girls. Also, under pressure, I bought a house, moved into it in June, sold it in January, and moved to Evanston, Ill., where I was extremely fortunate to secure an apartment. Our youngest, a boy, recently turned 18 and will finish his last year in high school here in Evanston, Selective Service permitting. After that Congress may determine. In spite of all the confusion, the family has enjoyed generally good health and the old man is holding his much receded hair line."

Preceding the Alumni Dinner on February 23, an informal gathering of the Class at the Statler Hotel was arranged by Tubby Strout and Ray Stevens. Those present elected Win McNeill as general chairman of arrangements for the 30th reunion, and as associate chairman for the Boston area, Henry Strout. Suggestions as to location and such other details that may occur to members of the Class should be sent to Win or to Henry. The Statler meeting was especially graced by the presence of Bill Sullivan and Claude Roberts, both of whom had come on from Washington for the occasion, and by our recently elected honorary member, T. P. Pitre, Associate Dean of Students. Others present were the following: Clarence Auty, Rudolph Beaver, K. E. Bell, Frederick Bernard, S. P. Batchelder, A. W.

Chase, A. A. Church, K. M. Childs, P. D. Childs, H. V. Chisholm, I. B. Crosby, C. C. Crowell, A. D. Dickson, A. P. Dunham, P. F. Dudley, R. H. Eaton, J. C. Flaherty, W. C. F. Gartner, A. E. Gilmour, P. E. Hulburd, E. H. Hutchinson, Leon Keach, H. A. Knapp, S. M. Lane, C. E. Lansil, H. E. Lobdell, J. A. Lunn, W. H. McAdams, Sherry O'Brien, E. V. Pollard, W. W. Rausch, L. P. Sanborn, H. N. Sandell, Raymond Stevens, H. E. Strout, W. C. Swain, A. E. Tuttle, H. A. Wansker, J. L. Wettlaufer, W. G. Whitman, W. C. Wood, E. M. Woodward. — RAYMOND STEVENS, *Secretary*, 30 Memorial Drive, Cambridge 42, Mass. PHILIP E. HULBURD, *Assistant Secretary*, Phillips Exeter Academy, Exeter, N.H.

1918

At the Alumni Dinner on February 23 the following were present: F. A. Magoun, L. C. Conner, Jacob Young, Carlton Tucker, Tom Kelly, Eli Berman, Ray Miller, Chink Watt, John Kiley, Bill Wills, and your Secretary. It was good to see Chink Watt after these many years. Bill Wills says that 400,000 copies of his new book on little houses, *Houses for Homemakers*, have been sold. Congratulations, Bill. It is reported that Edward H. Hellier has been added to the staff of the Hartford Trade School to teach in the science department. — GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

1919

Chuck Drew writes from Minneapolis: "Thank you, Gene, for your very real and substantial contribution to us all as Class Secretary. I hope your health is such that we can count on your carrying on for another 25 or 50 years! For those of us who haven't been getting about the country to do a little visiting, these last years, it is a real pleasure to browse through your column."

Eugene Mirabelli, Associate Professor of Civil Engineering, dropped your Secretary a line to say that he was still at the Institute. — Mail addressed to Commander C. H. Paulsen as Staff Com lan crab, 11th Phib., F.P.O., New York, has been returned. If anyone knows his whereabouts, kindly inform your Secretary. — Edward G. Moody is going to celebrate his 25th wedding anniversary this year. His son is back from overseas and re-enlists in the Navy. His daughter will be graduated from Stratford Junior College in Danville, Va., this June. Moody is a member of the Society of Automotive Engineers. He has been building and rebuilding his summer camp at Hollis, N.H.

The following changes of address have been received: Richard F. Cashin has moved from Chicago and is with the West-boyd Chemical Company, Inc., at 548 West State Street, Calumet City, Ill. Mrs. Louis Fichter's address is 1718 Eutaw Place, Baltimore 17, Md. Robert E. Friedlich now resides at 58 Greenfield Lane, Rochester 10, N.Y. Russell Hamilton has moved from Arlington, N.J., to 94 South Munn Avenue, East Orange, N.J. James M. Strang's new address is Highland Building, 121 South Highland Avenue, Pittsburgh 6, Pa.

Mason S. Noyes, 3430 Morrison Place, Cincinnati 20, Ohio, left his assignment

with the Bureau of Ships in the Navy Department, Washington, D.C., to become assistant chief engineer of the Lunkenheimer Company, Cincinnati, beginning in April, 1945. He writes: "Having enjoyed the relative spotlessness of the nation's capital, I am trying also to help persuade Cincinnati not to be the dirtiest and sickest city in the Ohio Valley. I am still active in the Boy Scouts and belong to Lunkenheimer Bowling League." — EUGENE R. SMOLEY, *Secretary*, The Lumms Company, 420 Lexington Avenue, New York, N.Y. ALAN G. RICHARDS, *Assistant Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

1920

The big news is the date and location of the delayed 25th reunion. It will be at our favorite spot, the Sheldon House, Pine Orchard, Conn., on the week end of June 15. The idea is to get there Friday, the 14th, in time for dinner and stay until Sunday afternoon. We shall have the entire house to ourselves, and if we don't have a good time, it will be our own fault.

This is written just after the big Alumni Dinner of February 23. Our Class was exceedingly well represented with two big tables and the following classmates in attendance: Norrie Abbott, Franklin Badger, All Burke, Scott Carpenter, Foster Doane, Henry Erickson, Ed Farrow and his son, Al Glassett, W. P. Hooper, Dan Lord, Frank Maconi, George des Marais, Ned Murdough, E. R. Perkins, Bat Thresher, Al Wason, El Wason, Ernie Whitehead, and George Wilson. It was great to see Ed Farrow and his fine-looking son, Hank Erickson, and Al Wason, looking very fit after his Army experience. Hank Erickson has been transferred from the Washington office of Allis Chalmers to their New York office as mining engineer. He has been with Allis Chalmers since 1929 and was on leave from 1936 to 1938 to become managing director of Separation Engineering, Ltd., London, England. During the war years he served with the Office of Price Administration, then as a captain in aviation with the Marines, and later as chief of resources with the War Production Board, returning to Allis Chalmers in 1944.

Phil Brown, Secretary of the Hartford Fire Insurance Company, received a gold pin in honor of his 25th anniversary with the company recently. Phil lives at 111 Griswold Drive, West Hartford. — Warren Chaffin, who has been associated with J. L. Stifel and Sons, Inc., a cotton textile firm, in Wheeling, West Va., since 1930, has been elected executive vice-president and director. Dan Hennessy is back from California and is living in Brookline, address 29 Hawthorn Road. George Walmsley has left Texas and is living in New Bedford, Mass., address 245 Query Street. John Vischer is now in Pawtucket, R.I., address 86 Armistice Boulevard. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

1923

I mentioned last month the award of the Bronze Star to J. W. Beretta for his work with the physical damage division of the United States Strategic Bombing Survey in Europe. Jack was notified in January that he had been promoted to the grade of

colonel in the Corps of Engineers. As these notes are written, he is on terminal leave to expire March 17 and is naturally pleased to be leaving the Army with a full colonel's rank. Perhaps of more practical importance to him, however, is the fact that in January he was made president of the First National Bank of San Antonio, Texas. He plans, he tells me, to continue his consulting engineer's office as well.

I saw J. W. Voelcker in London in 1943. He was then a major in the British Army. He writes me that his military career ended, as he puts it, "somewhat ingloriously" in March, 1944, when his health broke down and he was retired to the hospital. He was allowed out of the hospital on condition that he take it easy. Consequently, he says, they sold their house and took a ground floor flat at 19 Imber Close at Esher in Surrey. In November, 1944, he resumed work with the English Electric Company, Ltd., where they consented to let him work a light schedule; hence he can report that he is now getting along satisfactorily. — A clipping from the Newark N.J., *News* in January, tells of the engagement of Edward T. Ross to Eunice Beveridge of Glen Ridge, N.J. Ross is an engineer with McGlynn Hays and Company, Inc., of Belleville, N.J.

There are quite a number of changes and new assignments of various members of the Class — many, I suspect, as the result of the change-over from war to peace. Charles S. Keevil is with Arthur D. Little, Inc., of Cambridge. Dr. Keevil had been representative of Division 11.3 of the National Defense Research Committee at Edgewood Arsenal. For Arthur D. Little he will head a research program of experiments to determine the feasibility of large-scale, long-term storage of ordnance equipment for the artillery division of the Ordnance Department of the Army. — R. K. Turner has been appointed assistant works manager of the Carbide and Carbon Chemicals Corporation. He had been superintendent of the Carbide plant at South Charleston, W. Va., and on the first of the year was moved to New York to assume his new duties with the corporation, having his office with the Carbide and Carbon Chemicals Corporation at 30 East 42d Street, New York 17, N.Y.

William S. la Londe, Jr., until recently a commander in the Navy, was appointed chairman of the civil engineering department of the Newark College of Engineering. Bill had been a member of the Newark College faculty between 1929 and 1941, when he went into the Navy. — A clipping from the Hartford, Conn., *Times* says that Archibald Williams of Bristol has been appointed director of industrial engineering for the American Hardware Corporation. He will direct all phases of industrial engineering, including job evaluation, time study, standards, methods and process engineering.

Jonathan Brown, 3d, of Wellesley is one of the purchasers of the factory and silverware business in Gardner, Mass., of Frank W. Smith, Inc. Brown will be treasurer of the new corporation, known as the Frank Smith Silver Company. A clipping from the *Wellesley Townsman*, from which the foregoing information was obtained, reports that Brown had been associated with various Boston firms, including Coffin and Burr, investment bankers, and the Franklin Management Corporation, investment coun-

selors. In 1938, he became treasurer of the Wood, Brown and Wood advertising agency and is continuing in that capacity.

R. W. Hebard and Company, Inc., New York engineering and construction firm, announces the appointment of D. H. McNeal as vice-president and director. The concern operates principally in Latin America, where it is associated with leading engineers and builders. McNeal had been for four years assistant president of James Stewart and Company, Inc., a construction firm, and before this was for eight years technical director for the Federal Home Loan Bank Board and deputy general manager for the Home Owners' Loan Corporation in Washington. McNeal is one of the few honorary members of the American Institute of Architects. — William T. Roth reports that his firm, the Chatham Manufacturing Company, has moved its credit department to Elkin, N.C., and him with it. He is greatly pleased at this because Elkin is his home town.

I recently asked Michael Drazen the meaning of a new address I had for him, and I got the following reply, written on the stationery of Michael Drazen and Associates, Engineers, Roosevelt Hotel Building, 4903 Delmar Boulevard, St. Louis 8, Mo. Drazen says: "Two events have occurred which, as you put it, might be of interest to some of my friends, though I doubt whether they hold any general interest. My change of address, or rather my resumption of my former address, was brought about by my return from service after 38 months in the Army. My last two years were spent with the Corps of Engineers, negotiating utility power contracts for the Ninth Service Command. In the course of my meanderings through the eight western states, I met the cause of the second important event, namely the woman whom I married. The meeting occurred while I was on a strictly official mission in Los Angeles. Her name, Helen Sichel; the date of the merger, September 19. Uncle Sam finally decided that he could do with one less captain, and so I became a full civilian (subject to the six months' limitation, of course), on January 25, when my terminal leave ended. I am back in private engineering practice, a large share of it being in rural electrification."

At the Alumni Dinner at the Statler in Boston on February 23, two tables were filled by the following: Benjamin Albert, Horatio L. Bond, John E. Burchard, Clarence H. Chaisson, Harold B. Golding, E. Louis Greenblatt, W. B. Greenough, Jr., Joseph Fleischer, Franklin K. Haven, Robert E. Hendrie, George A. Johnson, Forrest F. Lange, James A. Pennypacker, Gerald Putnam, P. S. Rice, Edward C. Rue, A. M. Valentine, D. E. Washburn, S. S. Weinbaum, and E. W. Willis. — HORATIO L. BOND, *Secretary*, 457 Washington Street, Braintree 84, Mass. HOWARD F. RUSSELL, *Assistant Secretary*, Improved Risk Mutuals, 60 John Street, New York 7, N.Y.

1924

Nineteen members of the Class attended the February Alumni Dinner in Boston, in addition to Frank Shaw, who, as chairman for the dinner, sat at the head table. Those in attendance were George Parker, Ev Atwell, Blay Atherton, Phil Bates, Chick Kane, Don Moore, Bob Reid, Fred Westman, Tom Sherwood, Walt Kendall, Avery

Ashtown, Bud Robertson, Hap Stern, Harold Hazen, George Neitlich, Harry Goodman, H. H. Stutman, George Knight, and the Secretary. Program notes also indicated that Chick Kane was a committee member for the affair, and also, as in the past, the designer of the attractive stein. Further honors came to 1924 on the following Monday, when Lieutenant General Doolittle was the commencement speaker at Symphony Hall.

A few days before the Alumni Dinner, Bill Robinson, Chick Kane, and the Secretary got together for luncheon and to talk over possible reunion plans. Their opinion, which is supported by correspondence from other members of the Class, is that we might have a room at the Statler in Boston for Alumni Day in June and save our big effort for the 25th reunion three years later, in 1949, for which plans have already been started. Bill Robinson is in Cleveland as advertising manager of the lamp department of General Electric, and is also executive vice-president of the M.I.T. Association of Cleveland. He reports spending an evening recently with Si Simonds in San Francisco, where Si is port captain for a steamship company, married, and living up on the Twin Peaks. Bill reports that Phil Cohen is still in Cleveland with the Sturtevant Company (now Westinghouse).

Cy Duval is vice-president of the American Thermos Bottle Company in Norwich, Conn., and very much interested in our reunion plans, as are George Parker, now doing industrial engineering in Boston, and Ed Moll, reputedly looking for an opportunity to invest a considerable amount of both talent and money in a new enterprise. — A note from Sox Kinsey carries an address change from Oak Ridge, Tenn., to Scarsdale, N.Y., and the further information that he is works manager of Carbide and Carbon Chemicals Corporation.

Indicating further diversification of class interests is a clipping from the New York *Sun* telling of the work of Luis Ferre as secretary of the Puerto Rico Statehood Association. Ferre is also vice-president of the Puerto Rico Ironworks, treasurer of the Ponce Cement Corporation, and a director of the Banco de Ponce. Still another clipping informs us that Harry G. Burks, Jr., has been named general manager of the East Coast Manufacturing Operations of Standard Oil of New Jersey. Dr. Burks has been associated with this company since 1924. And from the Boston papers we learn that Frank Storey, a lieutenant commander, recently released after three and a half years in the Navy, has joined the K. J. Quinn Company in Boston as executive in charge of merchandising and sales. — FRANCIS A. BARRETT, *General Secretary*, 234 Washington Street, Providence 3, R.I. GEORGE W. KNIGHT, *Assistant Secretary*, 36 Arden Road, Watertown 72, Mass.

1926

Members of the Class by this time should have received announcements of the 20th reunion, which is to be held on the week end of June 22 at the Wianno Club on the south shore of Cape Cod. Chenery Salmon, chairman of the reunion, has appointed the following committee members: G. W. Smith and Cedric Valentine, entertainment; Flint Taylor and Sid Baylor, publicity; Don Cunningham and Bill Latham, transporta-

tion; Herb Beckwith and Bud Wilbur, finance; Bill Meehan and Joe Levis, athletics; Bob Dean, member at large. This 20th reunion should be our largest meeting to date, and members are urged to plan for it. The Wianno Club is a most attractive and appropriate place, and we have every reason to expect an exceptional week end.

Lead item of personal news this month is a further communication from our atom bomb expert, Whitney Ashbridge, of Philadelphia: "Had I realized you'd quote my V-mail letter from the Philippines verbatim in the class notes, I'd have been a bit more careful as to the style in order to keep up to the high standard you set in the old editorial days of *The Tech*! Since I last wrote, I've been to Japan, where I had about three weeks in which to look over northern Kyushu and southern Honshu, see some of the results of our bombing (which made me feel better about the ruins of Manila), get a few pictures and souvenirs, and in general get some idea of what the country is like. After looking at Japan, I don't see how they accomplished as much as they did with their limited resources. One factory I went through would have driven an American safety engineer or efficiency expert to despair — so many unguarded belts and presses and so much handling of the articles that we should have avoided by modern machines and methods. In late November, I returned to this country; on December 1, I went on terminal leave, in plenty of time for Christmas with the family; and on January 2, I began work with the United Engineers and Constructors, Inc., and am glad to be practicing engineering in civil life once more, much as I enjoyed the interesting experiences I had in the Army. . . ."

Stark Draper, Professor of Aeronautical Engineering at the Institute and in charge of the Instruments Laboratory, received the 1945 Sylvanus Reed Award in January from the Institute of the Aeronautical Sciences. The award, presented for notable contribution to the aeronautical sciences resulting from experimental or theoretical investigation, was given to Stark "for application of the gyroscope to computing sights for gunnery and to other computing devices." Stark made a major contribution to the war effort through the development of computing gun sights, and he has come to occupy an outstanding position in his field.

General Motors held an architectural prize competition last year for the design of automobile display rooms. The Secretary is just in receipt of a clipping dated July 7 which announces that honorable mention and prizes totaling \$500 went to Samuel E. Homsey and his wife. As of the date of this clipping, Homsey was a lieutenant commander, serving in the special devices division of the Navy's Office of Research and Inventions, and his wife was practicing architecture in Washington. They were planning to reopen their architectural office in Wilmington, Del. — Another of our atom bomb experts, Francis D. McKeon, recently was reported in the public press as addressing a group in Quincy on the construction of plants that made materials for the atomic bombs. McKeon has been connected with the Manhattan District, both in Boston and in Oak Ridge, Tenn. — E. Kendall Bragg, formerly on the tax staff of Lybrand, Ross Brothers and Montgomery, announces his association in the general

practice of law with Grant M. Palmer, Jr., E. Olsen Field, and Howard L. Rogers at 10 State Street, Boston.

Paul T. Post, formerly a geographer with the Tennessee Valley Authority, is now occupying the post of cartographic engineer with the Department of State in Washington. — Laurence S. Hunt, until recently with the Baldwin Locomotive Works, has now gone with the Du Pont company in Wilmington. — Still another of our atom bomb experts, Cyril S. Smith, has left the laboratories at Santa Fé to join the Institute for Study of Metals at the University of Chicago. — JAMES R. KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

1927

As the country settles back to civilian life, we have much news from our classmates, many of them recently released from the armed forces. There is word of LeTourneau, Berkeley, Castner, Jacobs, Stone, Marcucella, Parker, Berle, Westerhoff, Muchnic, and Arnold.

Before going further, however, we must with regret pass on word of the death of Morris Shulman, who lived at 52 Babcock Street, Brookline. He died on December 16. According to the last word we had, his business connection was with the L. J. Barwood Manufacturing Company of Everett, Mass. Possibly someone in the Class can furnish more up-to-date information.

Dory LeTurneau now lives at 136 Chestnut Street, Garden City, L.I. He was at Oak Ridge during the construction period there and along with so many others did not have the slightest idea what was being built. Right now he is looking for an opportunity to go abroad on construction work.

Bill Berkeley, captain of hockey in his senior year, sends greetings to all of us from 3076 South Woodrow Street, Arlington, Va., with the following account of his activities: "I was commissioned a first lieutenant in May, 1942, and sent from Massachusetts to Florida, thence to California, back to New Mexico and Texas, then overseas in the *Queen Mary* to England in September, 1942, from New York. I was with groups of B-17's in the early days there and thence was assigned to the First Air Division as aide-de-camp to the commanding general from January, 1943, to July, 1943. I then served as chief of statistical control (operations) for the First Air Division until November, 1943. Thence I was moved to the headquarters of the Army Air Forces in the Joint and Combined Staff Section of the Assistant Chief of Air Staff, Plans, spending most of my time on policy for the Joint and Combined Chiefs of Staff. I am now executive officer of the Strategy and Policy Division of the Assistant Chief, Air Staff, Plans. I have just returned from the United States-United Kingdom Civil Aviation Conference in Bermuda, where I served as War Department adviser to the State Department during negotiations. Passing from martial status to marital status, I have been married now for some 15 plus years, having a daughter 14, and a son 12. I used to see Phil Niles '25 (former hockey captain at the Institute) at the Pentagon and believe Frank Mead '28 is still there. Both were with the Army Service Forces. George A. Flynn is with Texas Oil. I re-

ceived a most interesting letter from George and Larry (Mrs. Flynn). George was in India for the Army, or at least the United States Government, during the war."

Jim Castner was with the explosives department of Du Pont until the first of this year and now is in the plastics department. In 1945, he was in Germany for four months as technician for the Navy. Jim is still single.

Reggie Jacobs finished up the war as a full colonel; he sends the following, as he calls it, "short" of his activities: "I was a junior engineer with the New York Highway Commission on bridge construction until September, 1929. I resumed life in Massachusetts, beginning work there as a senior civil engineer draftsman with the Massachusetts Department of Public Works. It was mostly office work, some field, on highways. I entered upon active duty in the Army in November, 1940; put in one year at Camp Edwards on construction, and so forth; returned to active duty on February 25, 1942; went to Belvoir — in the Engineer Reserve Training Corps for five weeks, then to engineer school, Staff and Faculty. I was assigned to troop duty in April, 1943, and was overseas from December, 1944, to August, 1945, in the European theater of operations. My terminal leave expired February 25, 1946. Right now I am back with the Massachusetts Department of Public Works. Like all ex-servicemen, I am in the market for a home — even a place to live — for my wife and me."

Edward D. Stone is in Panama, but when he gets back next month to his architect's office at 50 East 64th Street, New York City, we shall hope to have more details from him. — The Boston *Globe* of January 25 carried the following interesting item: "Com. Frank Marcucella of 87 Walsh St., Medford, recently returned from Pearl Harbor, has been given a welcome home party by his family. At Pearl Harbor he was commanding officer of Advance Base Construction Depot N-128. In 1927 Com. Marcucella was graduated from . . . Technology and has been engaged in construction work since."

Paul Parker has been in charge of a cool \$100,000,000 worth of construction for the Navy during the war. His own words will bring you up to date: "I have been in the Navy for a little more than five years and have thoroughly enjoyed every minute. My experiences have not been of the blood-curdling type, since I have spent most of this time well away from any combat area. During this time, I have been officer-in-charge of construction of various contracts totaling approximately \$100,000,000. These contracts have included an ordnance plant, shipbuilding facilities, and floating dry docks. Some of the dry docks were of the A.B.S.D. (Advance Base Sectional Dock) type, which are the largest in the world. I spent a few months in the Pacific on the staff of the commander of the Marianas and was the base development liaison officer for Saipan. I was on Guam on V-J Day. I saw Bob DeLuccia in Washington, D.C., in 1942 and almost met Frank Marcucella in Honolulu a few months ago. Bob was just beginning to rise in the Army, and Frank was doing a bang-up job in charge of the Navy's advance base construction depot. I expect to rejoin my wife and eight-year-old

son in California soon and plan to live there permanently."

Alf K. Berle is announced as a special consultant to Arthur D. Little's research program for determining the feasibility of large-scale, long-term storage of ordnance equipment. — Russ Westerhoff lives at 823 East 23d Street, Paterson, N.J. The No. 3 baby, Judith Anne, arrived in Paterson last November. Says Russ: "Last month I completed four years on a job we did for the Defense Plant Corporation at Charleston, W. Va. I was assistant project manager on the original work and project manager on the extension work. Our job consisted of the design and construction of a butadiene and styrene plant at Institute, W. Va. The butadiene plant was the first in the synthetic rubber program, making butadiene from alcohol, to go into production in 1943. The butadiene process was developed by the Carbide and Carbon Chemicals Corporation, and they operated the plant. Before going to Charleston, I spent several years in the South, working on various construction projects for my firm, Ford, Bacon and Davis, Inc. Now I am back in our New York office and hope I shall be able to stay at home for a long time."

The vice-president of Lowe's International Corporation is none other than George Muchnic, who lives at 875 Fifth Avenue, New York. He was in Washington for three and a half years as executive officer of the Army Pictorial Service in the Office of the Chief Signal Officer. — Dwight Arnold has agreed to stand for re-election as 1927's Council representative. So far no other nominations have been heard.

Next year is likely to see our 20th reunion. Just to begin at the top and work down, I suggest that we charter a Constellation and fly the gang to Bermuda for the week end. If you have any other or better ideas, let me hear from you. — JOSEPH S. HARRIS, *General Secretary*, Shell Oil Company, Inc., 50 West 50th Street, New York, N.Y.

1936

At the time of this writing, the returns from the reunion questionnaire are just beginning to come in. But from the response it is evident that we're going to have a big turnout; so it should really be a reunion of old friends. If you haven't yet returned your questionnaire to signify your interest in receiving the detailed reunion plans, you'd better do it right away. We plan further mailings only to those who have indicated an interest in the reunion. If you have mislaid the questionnaire, or for some reason did not receive one, please send a note immediately to the address listed at the end of this column. I am sorry that because of the delay between writing these notes and their appearance in print, I can't herewith give you the complete reunion plans. Those who have indicated an interest in the reunion should be receiving the detailed plans at about the same time that they are reading this. In order to let the rest of you know how the plans are taking shape, let me review them briefly. By popular demand, it looks as though there'll be a stag banquet to open the festivities on Friday, June 7. Then on Saturday we shall co-operate with the Alumni Day program, including the noonday luncheon at Technology and the evening ban-

quet at the Hotel Statler. There is also a definite sentiment for some sort of program on Sunday, which will probably be arranged. At what hotel we should have our rooms is an undecided question at the moment. Some of the Class want a suburban spot where we can take over the whole hotel. Others think the hotel should be conveniently situated for the Saturday night Alumni Banquet. All we can say is that when we have decided on the answer to this question, you may rest assured it will have received plenty of thought and will be based on the majority desire of the Class.

You may be interested to know that a large committee of the Class has been working on these reunion plans. In the New York area we've been in contact with Jack Austin, Fletch Thornton, and El Koontz; and these in turn have been in touch with Gordon Thomas, Milner Wallace, Hank Cargen, and Eli Grossman. In Cambridge, reunion problems are being handled by Bob Sherman, Elliot Robinson, Bill Garth, Martin Gilman, and Bill Saylor. All these men are working hard to make the occasion a rousing success. By the way, did you notice Bill Garth's picture peering at you out of a recent issue of *Fortune*? Neither did I, but I understand it was there. Bill is cited as a progressive young businessman who is doing a great job at Lithomat Corporation in Cambridge. Congratulations.

We haven't noticed any listing elsewhere in *The Review* for those who have been discharged from the armed forces. Here are the latest additions to the roster of those getting out: George Aderhold, Ken Blaisdell, Malcolm Blanchard, Vincent Dobert, Towers Doggett, George Donnelly, Jim Leary, Winthrop Stiles, and Ariel Thomas.

Still in the Army, a captain, and making a name for himself is Ed Howard, who served as a prosecutor in the first war crimes trials held in Japan. After finishing at the Institute, Ed was graduated from Boston University law school. He entered the Army in April of 1942 and for two years was assistant judge advocate at Camp Clairborne, Louisiana. In February, 1945, he went to serve with an engineer battalion in France and Germany. Then he was transferred to the Philippines, and in November he joined the legal section in Tokyo.

Other members of the Class are doing outstanding work. Bill Healy has been appointed head of the newly organized sanitation division of the town of Brookline. Before this he was in the sanitation department of the New Hampshire state department of public health, serving first as a district engineer and being acting director of the division for the past four years. He is said to have demonstrated ability both as an engineer and as an administrator. — Doing big things at Stromberg-Carlson is Oliver Angevine. He has been appointed chief sound equipment engineer, heading this department of the company. — Willard Greenwood is with Forbes Lithograph Company in Boston. — Edgar Petebone is with the Carter Oil Company in Tulsa, Okla.

We regret to announce the death on December 2 of William F. Ramsay, who was with us in Course XIII. Further details are not available. — ANTON E. HRTTL, *General Secretary*, 530 Norwood Avenue, Buffalo 13, N.Y.

1938

These notes are being written the day after the annual banquet at the Hotel Statler. It was a good stein-on-the-table banquet, and everyone had a fine time seeing some of the fellows we haven't seen for a long time. Will Roper was there; he has been a lieutenant colonel but is now on terminal leave. He expects to go back to his old job with Electrolux in Old Greenwich, Conn. Ira Lohman was another of our returned men. He came back from the Pacific in December to see his year-old daughter, Linda, for the first time. He is now studying at Technology for a few months and then will take his family to St. Louis, where he will begin work with the Emerson Electric Manufacturing Company. Mead Bradner was another classmate there; he has taken a position with the Foxboro Company, after having been with Westinghouse for three years. Burt Aaronson is out of the service and back with Filene's. Other fellows at the banquet were Franklin Atwater, John Phillips, and Don Severance.

Tenney Clough was married last January in Hartford, Conn., to Cecilia Ciak. Tenney, a junior grade lieutenant, has been in the Navy two and a half years and spent the last year and a half in the Pacific. Nathaniel Martin, a colonel, was married during the Christmas season to Virginia Brooks at St. Albans.

Paging through the address changes from the Register of Former Students brings to light quite a few of our Class who have joined the ranks of civilians. Ed Martin is out and is living in Denver, Colo.; John Summerfield is out and at the University of California at Berkeley; Jim Emery, King Coombs, Lynn Thatcher, Dave Morse, and Murray Hayward are also back. How about letting your Secretary know when you get out of the service and telling us about your job and family?

Don MacDonald is a lieutenant and transportation officer of the 101st Military Government group. He left the States in September and is stationed in Korea. In November, Don received a commendation for his work in making a survey of Korea. Harold McGillivray is working for the Pittsburgh Testing Laboratory, at present out of Tampa, Fla. Kantil Shah is connected with the Vasant Industrial and Engineering Works in Bombay, India. He is the secretary of the local M.I.T. club. Louis Bachmann has been elected president of L. Bachmann and Company, woolen and worsted selling agents and factors, a company formed by his father about 50 years ago. — DALE F. MORGAN, *General Secretary*, Carbide and Carbon Chemicals Corporation, 30 East 42d Street, New York, N.Y. ALBERT O. WILSON, JR., *Assistant Secretary*, 32 Bertwell Road, Lexington 73, Mass.

1941

On with the demobilization — even your Secretary may be wearing civvies before the next issue. Everett Sipsey dropped his two stripes and is now with American Viscose Company in Philadelphia. Last January, Everett married Martha Sobon of Lawrence. Lieutenant Colonel Fish is now Dave Fish of American Airlines, Chicago. Paul Huber, Walter Goldstein, Charlie Britt, Bill Cadogan, Norman Vandervoort, and John Van Riper can all be considered

as human beings again in civilian uniforms — no longer captains. Harvey Pofcher has dropped his sergeant complex. Kirke Marsh is another ex-major. To offset the reductions in rank, we appear to have a few promotions here and there; some may be late to the extent of referring to civilians, but we will sound off just the same. Howie Samuels, when last heard from, was a lieutenant colonel; Grover Rose and Eugene March receive majorities; John Stern and Bob Thompson are both lieutenant commanders; Dick Gould received his two stripes in the Navy, while Bob Simon received his two stripes in the Army. Bob's address is at Oak Ridge. Enough of this rank discussion.

Dave Weddell is now with the Monsanto Chemical Company in Alabama. Bill Folberth is located in Cleveland, Ohio. Dan Lenane is with the American Can Company in Maywood, Ill. Bob Montana lists the Gair Bogata Corrugated Fibre Box Company as his place of employment. Charlie Whitney is still out in San Francisco. Jim Thornton is still A.P.O.-ing out of that port. R. Wallace Blake is cadeting down in Corpus Christi, Texas. George Clark and Dick Barnard no longer list those A.P.O.'s. Dan Flowers is back at the Institute, brushing up. Courtland Perkins is now a professor at Princeton University. We received a timely card from John Stadig, a major, with an A.P.O. address out of New York. A note tells us of the arrival of Robert Dean Gott in the family of Les and Alice Gott.

Will Mott finally broke down (who is next?) and sent us in a short history on his post-Institute life. Says Mott: "A week or so after graduation I went to work for a division of the American Brake Shoe Company in Chicago. In March, 1942, Charlotte Douglas and I were married and moved to St. Louis. In December, 1942, we came East and started working for the central lab of the company, at Mahwah, N.J., living in Suffern, N.Y., and have been here ever since. I began in physical metallurgy and then became involved in layout and erection of an experimental foundry. For more than a year I was engaged in nearly every kind of practical engineering besides metallurgy. I have a Boy Scout troop which causes me no end of problems. Charlotte and I also sing in the church choir."

A faithful historian, whom we certainly appreciate, is Ivor Collins, who has recently returned from the southwest Pacific. "From June 1 to July 30, 1945, I was executive officer at the Mine Assembly Base at Pearl Harbor — a tender job, I must admit. Then someone decided I hadn't had enough sea duty; so I went to the U.S.S. *Adams* and headed west. We had got as far as Guam, when the war ended. We were in on some sweeping jobs in Japan later on and got to see a few Japanese cities, notably Nagoya, which had all been thoroughly cleaned out by the B-29's. I had my orders to separation center on October 26 and was released to inactive duty on November 26. A recent letter from Carl Aronsen, an ex-lieutenant, reports release from the Army on December 16. After a vacation in Minnesota, he was going back to his home in San Francisco. Bill Fox and his wife are living in a suburb in Baltimore. He writes that they spent a week end with Bob Mon-

tana and his wife and Bob, Jr. Bob should be out of the Navy by now. Have you any plans for the five-year reunion? I'd like to make it." As far as we know, Ivor, it is to be in the first part of June of this year and should be a good one.

We regret to report the death of Richard H. Seabury of our Class, on July 7. The Class joins in extending sincere condolence to the Seabury family. — STANLEY BACKER, *General Secretary*, 101 Providence Road, Primos, Pa. JOHAN M. ANDERSEN, *Assistant Secretary*, Saddle Hill Farm, Hopkinton, Mass.

1943

Those of you who have noticed the absence of class notes for 1943 in the last two issues of *The Review* may be wondering whether I have enjoyed hibernating. They would be right in that I have enjoyed the winter, though it has been anything but a blissful hibernation. Since release from the Army in November, I have returned to the Institute for a little graduate work. 'Nuff said about me.

Before we look at the news, there is a little official business. The Alumni Association is planning a special alumni observance on Saturday, June 8, along the lines of pre-war Alumni days, with symposium in the forenoon, grand open-air luncheon at noon, opportunities for social intercourse and other features in the afternoon, and an Alumni Banquet at the Statler in the evening. Since this event will not tie in with any graduation exercises at Technology, there will be no student guests at the Alumni Banquet. It is expected that a special program will be arranged for the ladies. How about letting me know any suggestions you may have about our participation in this meeting? Incidentally, you might kill two birds with one stone by adding to your suggestions a few words about your own activities during the last exciting year or two.

We have heard that the former Phyllis Louise Pollock and Eugene Magat were married in January at the Congregational Church in Newton Highlands, Mass. Phyllis, whose home is in Newton Highlands, was graduated from the New Jersey College for Women and then did some additional study at Technology. The Magats are now living in Wilmington, Del. On November 17, Barbara Warfield of Gorham, N.H., and Fred Roe were married. Barbara was graduated from Tufts and later joined the staff of the Radiation Laboratory. We learned, also, that Fred was recently released from the Army.

While recording the recent accomplishments of Cupid, we note that Peggy Taylor Brink of Newton, Mass., and Leo Feuer are engaged and that Anne Perringell of Belmont, Mass., and Charles Satterfield will soon be married. Anne was graduated from Wellesley and Charles from Harvard, later receiving a master's degree from the Institute. He is at present a research assistant in the Chemical Engineering Department at Technology. From a little farther away, news has reached us that Dorothy Mahoney of Portland, Maine, will soon be Lieutenant Scott Libbey's better half. Scott, when last heard from, was still in the Army Ordnance Department. About Christmas time, announcement was made by her parents that Mary Alice Gloria Tickell and

Leo Duval, an army lieutenant, were engaged. Mary's home is in Warwick, R.I., and after attending the Rhode Island School of Design, the Rhode Island Conservatory of Music, and finally the Greenwich School of Music, she joined the "Tars and Spars" show detail. She is last reported with the Coast Guard in Detroit. Leo, who is presumably still in the Philippines, was graduated from Signal Corps Officer Candidate School in June, 1943. Finally, my spies in Rockport, Mass., tell me that Marjorie M. Norton and Dick Blair are soon to be married. Both Marjorie and Dick have been with Metal Hydrides, Inc., in Beverly, Mass., but Dick expects soon to return to Technology for his doctorate in Chemistry.

A letter brimful of news has come from Stan Porosky, who writes as follows: "You will be interested to hear about a number of the Class who are stationed in the Manila area in the Philippines. Bill Bright and I have been actively engaged in revitalizing the Technology Club of Manila [see club notes for January and subsequent issues]. At our first meeting a number of the Class were present, and here is the detailed information. First of all, Frank Bennett is working in Manila and is in charge of the General Headquarters teletype system. A year ago Frank and I came overseas together, and we have managed to keep in touch with each other. Bill Bright is a radar officer in the Far East Headquarters of the Air Forces, and is also actively engaged in teaching and attending school at the Philippine Institute. Hugh Pastoriza came to the meeting, but I didn't have much opportunity to talk with him. Al Saer, a junior grade Navy lieutenant, represented the No. 6 Club. He tells me that Bill Post is in Washington and has been doing some rather important work for the Navy. Frank Smith is aide-de-camp to General Trudeau, an assignment which, needless to say, keeps him very busy. Frank has been over to see me once or twice with regard to the Technology Club of Manila and has been most helpful in rounding up the Filipino members of the old club. I received a letter from Ray Richards (see further below) who is in China with the Marine Corps. I myself am working in the Signal Supply Division of the Chief Signal Office, and my work has to do with expediting signal supply in this theater. In addition to this, I am handling radar distribution, which has fallen off considerably since the cessation of hostilities." May we add that Stan Porosky has been elected secretary-treasurer of the Manila club?

Ray Richards, off in the land of the mandarins, writes: "At least one of the Class was in the much-debated North China operation. I have been with the First Marine Aircraft Wing near Tientsin since early in October and expect that I shan't be seeing the States until early summer. China is very interesting, and I enjoy the duty here, in part at least, because my Technology background has helped me to make friends with some very nice Chinese people, who have been most hospitable." — With apologies to C.B.S. for stealing their pat newslime, we will say that for our next report from overseas we shall hear from Hans Haac in Offenbach, Germany. "Are you one of those lucky civilians?"

he asks and continues, "I am not as yet, but expect a discharge when the two-year-men can get out. Really, I don't mind Army life in my present position, but should like to get started in a few more years of college on the G.I. Bill. There are about six fellows with me in Offenbach. Our billet consists of an 11-room house, and the pay roll includes three secretaries (two of them in my office, ho-hum!), two cleaning women, a cook, and a mechanic for the vehicles." We see what he means about liking army life. . . . ho-hum again. Hans says, in addition, "I have been looking for M.I.T. men here, but have seen only John McMullin." — Now, for a report from home, we turn to the recent letter from Eliot Payson, who is still stationed at Aberdeen Proving Ground: "About the only news around here is the so-called R.I.F., or 'reduction in force' due to the end of the war. A point system operates for both civilians and military personnel. . . . Curt Smith is still around with no prospect of shipping out in the near future. He lives in Baltimore with Barbara. I see him once in a while, but he is definitely a married man now, so we don't see him around here much for the barracks busts."

Sometime last December I received a letter from Ed Lord, who said that he had just returned from 18 months of overseas duty and after reading the November issue of *The Review*, thought that it would be a good idea if he dropped me a line about a few of his activities after leaving Technology. A very commendable idea, Ed, which may serve as hint to some of the less communicative members of the Class. "In 1943," he continues, "I worked at the Kaiser Providence Yard while awaiting orders from the Navy. After two months there and four months in Chicago at midshipman school, I came home and married the former Hilda Stamp, the young lady who had taken up all my spare time at the Institute. I then had the good fortune to go back to Boston and to Tech for radar training. While there, I ran into Greg Gagarin, Moe Rosenthal, and several others whom I can't recall at present. My next orders took me to the Pacific, where I was attached to the U.S.S. *Redfish*. I made two patrols in her which were extremely successful; on the second run, however, we were damaged and sent back for repairs. Since I had only been out for a short time, I was transferred to the U.S.S. *Crevalle* in San Francisco. After two patrols in this ship, I was stationed ashore at the submarine base in Pearl Harbor. Then that wonderful day in August came, and I am now on leave awaiting final word on discharge. The only Tech men I ran into were the Brendis brothers in Honolulu."

Fred Mulhaupt, a Navy lieutenant, is at present a supply officer for the Engineer Island shipyard, where they repair all Army ships in the Army Forces of the Western Pacific. He entered the Army at Fort Belvoir early in 1943 and subsequently received a special training in building landing craft at New Orleans during 1943 and 1944. Later, he served at Camp Gordon Johnston in Florida and was finally shipped to Manila in September, 1945. Bernie Brindis was released from the Navy just before Christmas. Captain Burton Angell was sent to the 170th Engineer Combat Battalion at Camp Beale in California in the summer of 1943, and left for overseas somewhat later, after completing amphibious training at San Diego. Overseas, Angell was assigned to the 96th Division for shore party operations. His unit landed on Leyte, P.I., and built the first Bailey Bridge in the Philippines. His second campaign was in Okinawa, where he landed with assault waves in April, 1945. Angell was released from active duty early in 1946.

Francis Stone left the government service at Watertown Arsenal late last year and has begun work for the Chain Belt Company, in Milwaukee, as a research metallurgist. Charlie Crocker, released from the Army late last year, has joined the staff of Arthur D. Little, Inc., in Cambridge as a chemical engineer. Rumor has it that he has been seriously ill recently. Morton Schultz, recently released from the Chemical Warfare Service, has returned to the Institute for graduate work. Stewart Fletcher has been appointed chief research metallurgist at the Latrobe Electric Steel Company, Latrobe, Pa. For the past few years he has been a research associate at M.I.T., conducting research work on the dimensional stability of metals for the Sheffield Foundation. Virgilio Barco has received the marked distinction of having been made the secretary general of the Ministry of Postal and Telegraphic Communications in his native country of Colombia.

The final item for this month is contained in a news release from the public relations office of the American Military Government in Korea, which tells us that George Potts is now assigned to the electricity and chemical section of its Bureau of Industry and Mining, in Seoul, Korea. After entering the service in July, 1944, Potts was first assigned to the Infantry, and later to the Signal Corps, and finally left for overseas in January, 1945. He reached the Far East in time to take part in the Okinawa campaign. His wife and daughter are now living in Springfield, Mass. — CLINTON C. KEMP, *General Secretary*, Barrington Court, 988 Memorial Drive, Cambridge 38, Mass.

The whereabouts of some of our far-flung classmates comes from Bill Blitzler, an ensign at the Naval Radar Training School on St. Simon Island, Georgia: "Walt Borden, Romeo Favreau, Oliver (minus the tropical fish) Selfridge, Bud Schober, Ralph Strawn, Al Mencher, Jim Speaker, and Jack Sherman, ensigns all and representing everything from the vaunted physicists to the humble Course II plumbers, are being exposed to the tactical uses of radar here at this beautiful island resort. About all we have in common is that we all asked for something else in the way of duty, and now, after five weeks of school, it seems as though we are going to get it. Somehow, through the disorders of demobilization, someone has seen that it is not very wise to train us here for six months and then discharge us two months later; so we are now being dragged from our desks and sent to sea. I can also give you a little secondhand news the accuracy of which has not been enhanced by its word-of-mouth transmission: George Bickford, an ensign, is in the aircraft carrier *Corregidor*. Julian Gammon, an ensign, is making the pineapple run in a cargo ship out of Seattle. Don Hug, Ed Lerner, and Tom MacNamara are a few of the others aboard transports in the Pacific. Supply school in Bayonne, N.J., is blessed with the attendance of George Berman, Benny Vallorani, and Don Stevens, among others. Then, up Hahvahd way, Hal Rover is in the same deal. Bill Meade, an ensign, was in amphibious school in Coronado, Calif., when last heard from, and A. S. Cohen, likewise an ensign, is also in school out on the West Coast, studying how to be a port director. John Murphy was at turret school in Washington. Ensign Bud Wilson, believe it or not, is actually doing engineering work at Norfolk, Va."

Ensign Thorkilsen is said to be in the vicinity of Pearl Harbor. Vozella, whose name still appears on an office door in the second floor of the steam lab, finally broke down and joined the Navy. He is now occupied in a ship here in Boston. Homer Elliott is back for graduate work. Ensigns Hoaglund and Hickey were recently assigned to Newport as supply officers.

Tom Hickey's engagement to Louise Furber dates back to January. Dave Flood is engaged to Janice Meyer; Dick Winkler, to Elsie Littlefield. In addition to these engagements, there are several weddings to report: Roger Hood to Virginia Durfee; Bob Hibbard to Jane Morgan; Don Strang to Betty Orr; Dick Luce to Barbara Craven; and Jerry to Elizabeth Hostetter. This completes the news available at present. — THOMAS A. HEWSON, *Acting Secretary*, Room 3-257, M.I.T., Cambridge 39, Mass.

Alumni Day at M.I.T. —

SATURDAY, JUNE 8, 1946

Morning	Registration and Inspection of Buildings
Noon	Luncheon — Du Pont Court
Afternoon	Symposium — "The Technology of International Peace" — Great Court
Evening	Stein-on-the-Table Banquet — Hotel Statler

MANHATTAN Homocords

**Tote Extra Tons
to the
TIPPLE**

*Mildew-Proof
—Flexible*

Manhattan Homocord Conveyor Belts trough naturally and ride effortlessly over miles of idlers under the crushing, grinding, shifting weight of the toughest tonnage.

The secret of this supple and rugged belt is the Homocord STRENGTH MEMBER. It's a new pattern of longitudinal and cross-cords invented by Manhattan engineers, particularly and only for use in conveyor belts . . . Rippling Muscles of selected cords roll in a resilient matrix of FLEXLASTICS, absorbing and rebounding to every shock . . . And the Flexlastic cover is literally "rubber armorplate."

Unlike the ordinary cord belt type, Homocord holds metal fasteners. It also can be spliced and vulcanized in the field.

Another important Manhattan development is mildew-proofing to doubly insure long life.

Before you buy your next conveyor belt, you may want to check with operators who have records of Manhattan's higher haulage.



8 Points of SUPERIOR SERVICE

1. Complete bonding of every member into a homogeneous structure.
2. Holds metal fasteners.
3. Lateral flexibility permits perfect troughing, accurate training, reduces fatigue of flexing at bend in troughing idlers.
4. Resists destructive action of continuous or heavy impact feeding.
5. Cushion Homocord body and low inelastic stretch reduce wear and tear of top cover.
6. Homocord body reduces hazard of punctures.
7. Homocords so completely encased in Flexlastics, moisture not admitted, mildew cannot start.
8. Longer life, lower cost per ton.

Conveyor and Elevator Belts
Transmission Belts
V-Belts
Air, Water, Steam Hose
Fire Hose
Dusting Hose
Suction Hose
Oil Spray Hose
Flexible Rubber Pipe
Rubber-Lined Pipe

MANHATTAN

Condor
PRODUCTS

for the Coal Industry

Chute and Launder Lining
Packing and Tubing
Oilless Bearings
Vibration Dampeners
Mine Trolley Wire Guards
Reel Flanges
Brake Blocks and Lining,
Clutch Facings
Molded Mine Specialties



RAYBESTOS-MANHATTAN, INC

MANHATTAN RUBBER DIVISION

EXECUTIVE OFFICES AND FACTORIES

PASSAIC, NEW JERSEY

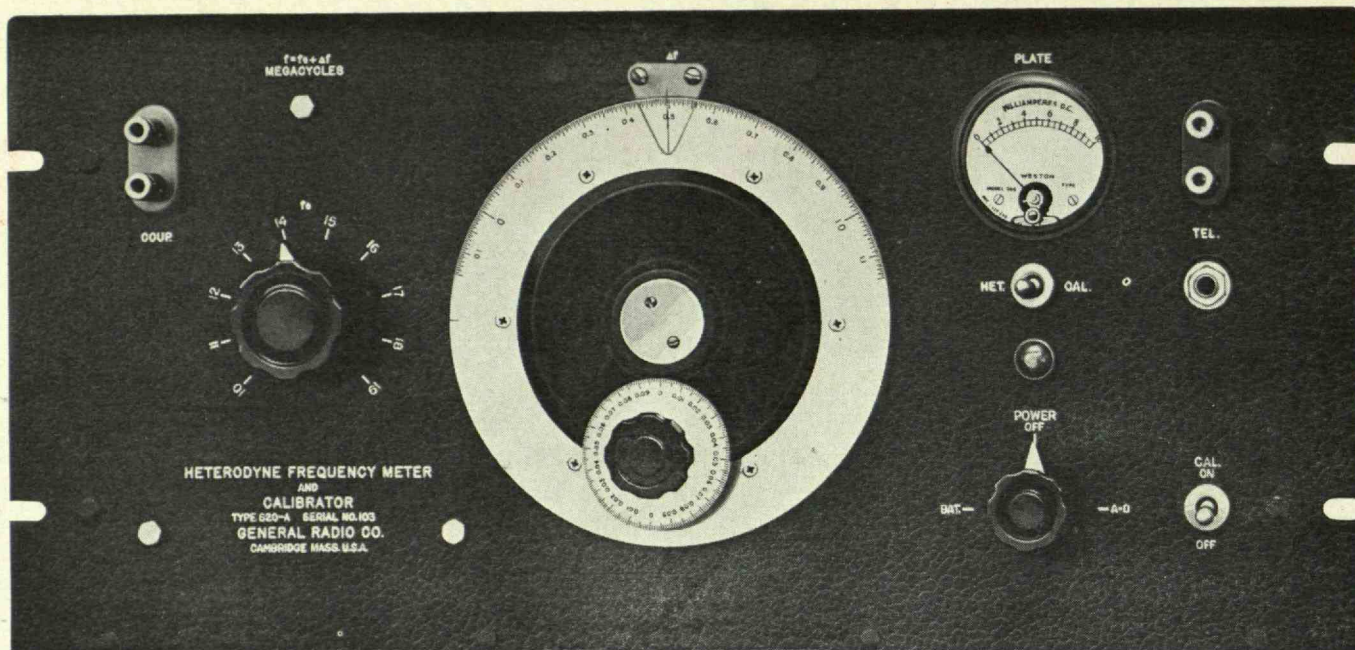
Thomas H. Boyd, '23

Wilder E. Perkins, '25

Charles P. McHugh, '26

Daniel J. Hanlon, '37

Albert W. Becker, '4



from 300 Mc to 300 kc

ANOTHER G-R instrument again available for civilian use! At the moment, the popular Type 620-AR Heterodyne Frequency Meter and Monitor is available from stock. As a general-purpose frequency measuring instrument, this meter is very valuable for measuring the frequencies of a number of transmitters, for calibrating and servicing receivers and for checking the ranges of receivers and oscillators. Where the allowable frequency tolerance is 0.02% or greater, this meter can be used for monitoring radio transmitters.

FEATURES

- **VERY WIDE RANGE** — 300 kilocycles to 300 megacycles
- **DIRECT READING** — no charts or curves to bother with
- **SELF-CALIBRATING** — calibration can be checked immediately from built-in piezo-electric oscillator
- **NO COILS TO CHANGE** — built-in coil system with 10-point panel selector switch
- **GOOD ACCURACY** — over-all accuracy is 0.01% or better
- **FLEXIBLE POWER SUPPLY** — built-in a-c supply or external d-c source, either selected by panel switch

TYPE 620-AR (Relay Rack Model) HETERODYNE FREQUENCY METER and CALIBRATOR.....\$490

Order now; delivery probably can be made from stock



GENERAL RADIO COMPANY

Cambridge 39,
Massachusetts

90 West St., New York 6 920 S. Michigan Ave., Chicago 5 1000 N. Seward St., Los Angeles 38